December 2, 2009

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: A National Broadband Plan for Our Future, NBP Public Notice # 16, GN Docket No. 09-51

Dear Ms. Dortch:

The Advanced Communications Law & Policy Institute ("ACLP") at New York Law School[1] respectfully submits these comments in the above-referenced Federal Communications Commission ("FCC" or "Commission") docket.

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[1] The ACLP is an interdisciplinary public policy program that focuses on identifying and analyzing key issues in the advanced communications sector. For more information, please visit the ACLP's website.

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I. INTRODUCTION

On several occasions, the ACLP has identified broadband adoption as the most critical component of the FCC's forthcoming National Broadband Plan.[2] In particular, the ACLP has called on the Commission to focus its plan on maximizing the broadband adoption rate "in order to ensure that all user groups are able to participate in the emerging broadband culture."[3] The ACLP thus commends the FCC for seeking additional insight into the dynamics associated with broadband adoption and urges the Commission to center its Plan on bolstering adoption rates across all demographic groups and sectors of the economy.

The ACLP offers the following responses to the Commission's queries included in NBP Public Notice #16[4] in order to provide the FCC with additional insight into two key components of broadband adoption.

First, as discussed in Part II of this filing, the Commission should make a clear distinction between the price of broadband and affordability of broadband. Price is an objective measure that signals the cost of a particular good or service to a consumer. Affordability, on the other hand, is a relative measure that stems from a consumer's perception of the value of a good or service. Consumers are apt to consider the same good affordable or unaffordable for any number of reasons. In the broadband context, the distinction between these two terms is critical to furthering an understanding of the underlying dynamics associated with broadband adoption.

Second, as discussed in Part III of this filing, the FCC should leverage the expertise and core competencies of local and state policymakers when seeking to bolster the broadband adoption rate. A wide array of local stakeholders – from city council members to state legislators – in a number of cities and states across the country have demonstrated a commitment to raising awareness of the benefits of broadband and to spurring additional utilization of it. In many cases, these efforts predate the FCC's National Broadband Plan initiative by several years. As a result, a significant number of local policymakers have honed critical skills that the FCC should acknowledge and leverage in it plan.

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[2] *See* Reply Comments of the Advanced Communications Law & Policy Institute at New York Law School, at p. 9-10, *In the Matter of National Broadband Plan for Our Future*, GN Docket No. 09-51 (July 21, 2009) (arguing that "In light of the many life-enhancing impacts of broadband, it is imperative that the FCC craft policies that spur demand and adoption of this vital technology among users and user groups that, for whatever reason, remain offline") ("*ACLP Reply Comments*"); The Advanced Communications Law & Policy Institute at New York Law School, *Barriers to Broadband Adoption*, A Report to the FCC (Oct. 2009), *available at* http://www.nyls.edu/user_files/1/3/4/30/83/ACLP%20Report%20to%20the%20FCC%20-%20Barriers%20to%20BB%20Adoption.pdf (identifying over 60 barriers to broadband adoption among senior citizens and people with disabilities and across the telemedicine, energy, education, and government sectors, and arguing that "as the FCC moves forward with is national broadband plan, understanding the many policies that directly and indirectly impact demand for and adoption of broadband will ensure a comprehensive and effective plan that stimulates awareness and usage of this vital technology," *id.* at p. 5).

[3] *ACLP Reply Comments* at p. 9.

[4] *See In re A National Broadband Plan for Our Future, Public Notice #16 – Comment Sought on Broadband Adoption*, GN Docket No. 09-51, (rel. Nov. 10, 2009).

Appendix A of this filing includes a study that the ACLP recently completed for the U.S. Chamber of Commerce entitled *The Impact of Broadband on Senior Citizens*. This study (1) analyzes the broadband adoption dynamics for older adults, (2) highlights the adoption gap between seniors and the general population, (3) identifies approaches that have been successful in bringing seniors to broadband, and (4) articulates a series of best practices for spurring additional adoption within this segment of the population. The ACLP is currently completing another study for the U.S. Chamber of Commerce entitled *The Impact of Broadband on People with Disabilities*. The ACLP will file this study with the Commission upon completion and release.

II. THE NATIONAL BROADBAND PLAN SHOULD MAKE A CLEAR DISTINCTION BETWEEN THE PRICE OF BROADBAND AND AFFORDABILITY OF BROADBAND (QUESTION # 3)

Although the Commission identifies "affordability of broadband" as a barrier to further adoption,[5] several stakeholders continue to conflate the actual price of broadband with whether the service is affordable to non-adopters.[6] Clearly delineating the differences between price and affordability will allow the FCC to more accurately identify and define the wide array of barriers impeding further broadband adoption among certain user groups.

Both "price" and "affordability" revolve around the cost of a good or service, but they have vastly different connotations. "Price" is an absolute term that describes, according to the Oxford English Dictionary ("OED"), the "amount of money (or a material equivalent) expected, required, or given in payment for a commodity or service."[7] "Affordability," on the other hand, is a relative term that varies from person to person. Indeed, per the OED, to be able to afford something, one must be able to "manage to give" or "spare."[8] Other definitions of "afford" refer to a person's ability to "spare the price of" or "bear the expense of."[9] Whether someone is able to "bear the expense" of a particular good certainly depends on how that good is priced, but other factors influence whether a specific consumer views that good as affordable or not. This distinction is critical in the broadband context.

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[5] *Id*. at p. 2.

[6] For example, a recent report on broadband adoption by the U.S. Broadband Coalition identifies "affordability" as a barrier to broadband adoption. However, when describing this barrier, the report states that "For many nonsubscribers, it is the monthly, reoccurring cost of broadband services that creates a barrier to entry and prevents them from subscribing." *See Expanding and Accelerating the Adoption & Use of Broadband Throughout the Economy*, at p. 6, A Report of the Adoption and Use Working Group, U.S. Broadband Coalition (Nov. 2009), *available at* http://www.baller.com/pdfs/US_Broadband_Coalition_A&U_Report_11-13-09.pdf ("*Expanding Adoption*"). *Cf. Barriers to Broadband Adoption* at p. 13 & 26 (discussing the affordability of broadband to non-adopting senior citizens and people with disabilities and observing that the price of a subscription is but one factor impacting adoption decisions).

[7] *See* Oxford English Dictionary, 2nd Edition (2009).

[8] *Id.*

[9] *Id.*

Pew has observed a positive correlation between income and broadband adoption. In particular, adoption rates increase with higher incomes levels: households with incomes over $100,000 per year have an 88 percent adoption rate, compared to 82 percent for those earning between $75,000 and $100,000 per year and 80 percent for households reporting income of between $50,000 and $75,000 per year.[10] The adoption rate for those earning less than $20,000 per year is under 40 percent.[11] However, despite this trend, the relationship between income levels, non-adoption, and the price of broadband, is less clear. Only 19 percent of non-broadband adopters cite the price of the service as the primary reason for not subscribing to broadband.[12] "Affordability," then, is influenced by several non-price factors.

First, whether or not consumers view broadband as relevant – i.e., that they can derive value from a connection – directly impacts their perceived value of the service. For example, an avid gamer, who consumes high amounts of bandwidth per month, will likely value a broadband connection more than a senior citizen who is unaware of the value of using this technology.[13] As a result, the gamer will likely find broadband affordable at a wide array of price points, whereas the senior citizen will likely find broadband unaffordable at nearly any price point.

Several studies have observed a lack of relevance among many under-adopting demographic groups. Pew, for example, has found that half of non-broadband adopters "question the relevance of connecting to the Internet – either at all or with high-speed at home."[14] Other studies have suggested that a lack of relevant online content could explain a perceived lack of value for using broadband among some demographic groups. For example, one study has suggested that enhancing online content targeted at the African-American community could spur further adoption of broadband among this segment of the population.[15] Another study has suggested that additional online content tailored to the needs and interests of senior citizens might bolster broadband adoption.[16]

Another factor that influences the perceived affordability of broadband is the total cost of accessing broadband, which includes the purchase of additional hardware or software items

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[10] [10] *See* John Horrigan, *Home Broadband Adoption 2009*, Pew Internet & American Life Project, at p. 14 (June 2009), *available at* http://www.pewinternet.org/~/media//Files/Reports/2009/Home-Broadband-Adoption-2009.pdf ("*Home Broadband Adoption 2009*").

[11] *Id.*

[12] *Id*. at p. 8.

[13] These concerns are a barrier to further broadband adoption among seniors. *Barriers to Broadband Adoption* at p. 10-11.

[14] *Home Broadband Adoption 2009* at p. 8.

[15] *See Broadband Imperatives for African Americans: Policy Recommendations to Increase Digital Adoption for Minorities and Their Communities*, at p. 11, A Report from the National Black Caucus of State Legislators et al. (Sept. 2009), *available at* http://www.jointcenter.org/index.php/content/download/2638/17064/file/MTI_Broadband_Report_Print.pdf ("*Broadband Imperatives*").

[16] *Barriers to Broadband Adoption* at p. 12-13.

necessary to enable a connection. For example, many non-adopters lack a home computer, which can cost several hundreds of dollars.[17] When viewed in combination with a monthly broadband subscription, the total cost of getting online via broadband may be unaffordable. In addition, some people with disabilities require expensive assistive technologies ("ATs") to effectively use a computer or broadband connection. These could include screen reading software, text-to-speech applications, and a specially-designed mouse or keyboard. The total combined cost of these items – a computer, broadband connection, and necessary ATs – are often unaffordable to many people with disabilities even though "individual components – e.g., a broadband subscription – may be affordable."[18]

Yet another factor that influences affordability perceptions of broadband is whether a particular consumer has enough training to effectively use a computer or an Internet connection. If a given technology appears to be overly complex, then a consumer who lacks adequate expertise to use that technology will likely perceive it to be unaffordable at nearly any price. Moreover, a number of other concerns often add to a sense that a technology is unaffordable or not worth the price. For example, many senior citizens harbor fears about the safety of the Internet.[19] In particular, a significant number of seniors are concerned about online identity theft. These fears often impede the ability of reluctant senior citizens to appreciate the true value of a broadband connection and contribute to a perception that broadband is unaffordable.

Clearly distinguishing between the price of broadband and whether the service is affordable to a particular consumer will allow the Commission to more carefully target policies that seeks to close the gap between adopters and non-adopters.

III. THE NATIONAL BROADBAND PLAN SHOULD INCLUDE MECHANISMS THAT LEVERAGE THE CORE COMPETENCIES OF LOCAL & STATE POLICYMAKERS FOR CLOSING THE ADOPTION GAP (QUESTIONS # 4 & 5)

By virtue of their proximity to consumers and their collective experience in studying broadband adoption dynamics at a relatively granular level, local and state policymakers – including elected officials (e.g., city or state legislators) and appointed officials (e.g., regulatory utility commissioners) – are uniquely positioned to assist the FCC in spurring utilization of broadband. The FCC has explored the relationship between government and broadband in a number of instances[20] and should continue to investigate how to leverage the expertise and experiences of

[17] *Id.* at p. 13, 23-24 (observing low computer ownership rates among senior citizens and people with disabilities).

[18] *Id.* at p. 26-27 (observing that "The multiple cost components for people with disabilities who wish to adopt broadband have had a discernible impact on broadband adoption. Individual components – e.g., a broadband subscription – may be affordable, but when combined with expensive ATs and the cost of purchasing a computer, broadband adoption becomes beyond the means of many people with disabilities.").

[19] *Id.* at p. 14.

[20] The FCC has held a staff workshop to assess how state and local governments approach a variety of broadband issues, including deployment and adoption. *See* Broadband.gov, Workshop: State and Local Governments: Toolkits and Best Practices, http://www.broadband.gov/ws_state_and_local.html. The FCC also issued a Public Notice seeking comment on the "Contribution of Federal, State, Tribal, and Local Government to Broadband." *See In the*

local and state policymakers for spurring broadband adoption. Indeed, as discussed in this section, local and state policymakers possess a valuable set of core competencies that will likely prove invaluable to the FCC as it develops policy mechanisms for spurring broadband adoption. As such, the FCC should acknowledge and consider the following set of core competencies in order to ensure that its national broadband plan includes a comprehensive and integrated adoption strategy.

***Core Competency #1* – Ability to appreciate the contours and dynamics associated with broadband demand and adoption at a very granular level.**

Accurately gauging levels of demand and adoption is challenging, especially within certain user groups (e.g., people with disabilities[21]) and demographic groups (e.g., low-income users).[22] In particular, assessing demand and adoption on a granular level (e.g., within a specific neighborhood) is difficult and beyond the reach of federal officials. However, policymakers at the local and state levels, by virtue of their proximity to local consumers, are uniquely positioned to observe adoption trends and to study the many policy and non-policy barriers that directly and indirectly impact broadband demand, adoption, and use by their constituents. These issues might include access to a computer, negative perceptions related to the usability of various computer and Internet technologies, and the lack of a clear value proposition being offered to user groups like senior citizens, people with disabilities, and healthcare providers.[23] A growing literature on broadband adoption provides local and state policymakers with a useful starting place for this further analysis,[24] as additional inquiries are likely needed to identify the specific needs and obstacles of local populations.

***Core Competency #2* – Ability to highlight the key role that existing programs play in stimulating demand for and spurring adoption of broadband.**

Nonprofit groups and other programs play an invaluable role in raising awareness of broadband, providing access to affordable computers, training, tech support, and other critical components

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Matter of a National Broadband Plan for Our Future, Public Notice #7, GN Docket No. 09-51, (rel. Sept. 25, 2009), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-09-2122A1.pdf.

[21] Indeed, a lack of data regarding the levels of demand for and adoption of broadband among people with specific types of disabilities has been identified as a barrier to further adoption across this entire segment. *Barriers to Broadband Adoption* at p. 29-30.

[22] *See, e.g.*, Charles M. Davidson & Michael J. Santorelli, *The Impact of Broadband on Senior Citizens*, at p. 7, A Report to the U.S. Chamber of Commerce (Dec. 2008), *available at* http://www.nyls.edu/user_files/1/3/4/30/83/BroadbandandSeniors.pdf and Appendix A, *infra* ("*Broadband & Seniors*").

[23] *Barriers to Broadband Adoption; see also* Charles M. Davidson & Michael J. Santorelli, *The Impact of Broadband on Telemedicine*, A Report to the U.S Chamber of Commerce (April 2009), *available at* http://www.nyls.edu/user_files/1/3/4/30/83/BroadbandandTelemedicine.pdf ("*Broadband & Telemedicine*").

[24] These resources include: *Barriers to Broadband Adoption* (previously cited), *Broadband Imperatives* (previously cited), and *Expanding Adoption* (previously cited).

associated with broadband adoption.[25] Many of these programs offer tailored training services for a particular user group (e.g., senior citizens or people with disabilities). In addition, many of these programs provide services in neighborhood institutions (e.g., senior centers and community centers), which suggests a familiarity with local conventions, tastes, and needs. One-size-fits-all training programs may be effective in teaching the basics of effective computer and Internet usage to a majority of students but, given the different needs of user groups, some may be left behind. Thus, local groups that provide targeted services are of enormous value in stimulating demand for and spurring adoption of broadband among those users who remain offline. Local and state policymakers are uniquely positioned to identify these efforts and publicly endorse those that effectively raise awareness of broadband, provide adequate training to use the technology, offer a clear value proposition to enhance the relevance of high-speed Internet access, and ultimately bolster adoption of broadband by non-adopters.

***Core Competency #3* – Ability to create mechanisms that support local training and demand-stimulation efforts in a sustainable way.**

The lifeline for many local organizations that specialize in training or otherwise raising awareness of broadband among non-adopters is public funding. While some local nonprofits are able to attract private support, many programs rely entirely on public funding.[26] Federal stimulus funds have been allocated to support broadband adoption efforts, but these will be exhausted by 2010.[27] However, in lieu of additional federal funding, local and state policymakers can provide additional funding to these groups in order to ensure a firm long-term commitment to maximizing the adoption rate across all demographic groups. In particular, local policymakers could dedicate a reliable stream of funding for these programs and could also create competitive grant programs to support effective local efforts. In addition, local and state policymakers could experiment with tax credits or other such incentives for spurring adoption.[28] Local policymakers could also collaborate with stakeholders in the private and nonprofit sectors to develop innovative public-private approaches to spurring broadband adoption.[29]

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[25] *See, e.g., Broadband & Seniors* at p. 34-35 (noting that, in the seniors context, "local efforts have been highly successful at bridging [the adoption] divide by providing seniors with targeted training in basic computer and Internet skills.").

[26] *Id.*

[27] At least $250 million has been allocated for "sustainable broadband adoption programs." *See* HR – 1, The American Recovery and Reinvestment Act of 2009, p. 14, *available at* http://readthestimulus.org/hr1_final.pdf

[28] Some have proposed extending tax credits to individual users. *See, e.g., Broadband & Seniors* at p. 35.

[29] One recent proposal could provide a template for such collaborations. The cable industry has proposed an Adoption Plus program that would bring low-cost computers and Internet access into the homes of low-income middle school students. Cable service providers would subsidize half the cost of a monthly broadband subscription; computer manufacturers would provide discounted or low-cost computers to these students; and additional funding would come via federal stimulus dollars. This type of collaboration could be replicated in a variety of contexts at every level of government. *See* National Cable & Telecommunications Association, Adoption Plus Program, http://i.ncta.com/ncta_com/PDFs/AdoptionPlus_Overview_12.02.09.pdf.

***Core Competency #4* – Ability to partner with local training and demand stimulation organizations in order to raise awareness of technology generally and broadband specifically.**

Local and state policymakers oftentimes have more flexibility and more incentive to work closely with nonprofit groups and other stakeholders to spearhead innovative approaches to spurring demand and adoption for technologies like broadband. The results of these efforts can have profound impacts on non-adopters. For example, in New York City, City Councilmember Gale Brewer worked with Older Adults Technology Services to put on a "touch tank" for senior citizens. This event brought seniors together to experience new technologies, answer any questions, and allay any fears they might have.[30]

Similarly, policymakers could tout the positive impacts of broadband on specific demographic groups by commissioning studies or holding hearings. The New York City Council, for example, has held numerous hearings on the positive impacts of broadband over the last several years.[31] The National Association of Regulatory Utility Commissioners and the National Conference of State Legislatures, among many other such groups, have held numerous panel discussions regarding broadband adoption and remain actively engaged in these issues.

***Core Competency #5* – Ability to leverage existing resources in order to gauge adoption levels and to target outreach efforts.**

Several states and municipalities have launched a variety of inquiries over the last several years to study broadband from a variety of vantages. To the extent that these efforts are still viable, the FCC should encourage policymakers at the local and state levels to leverage these efforts for use in raising awareness of broadband among non-adopters and gauging current levels of demand and adoption among discrete user groups. Such data – qualitative, quantitative, and anecdotal – could bolster federal efforts and assist in more carefully targeting adoption policies. Three examples are illustrative of the potential for these efforts:

- The New York City Council passed a local law in 2005 that called for the formation of a broadband advisory committee, which was charged with examining the local broadband market and assessing whether municipal action

[30] *See* Success Stories, *"Touch Tank" Puts Technology in the Hands of Seniors*, Older Adults Technology Services, Inc., *available at* http://www.oatsny.org/touch_tank.htm.

[31] For example, in 2005 the Council's Committee on Technology in Government held oversight hearings on the impact of technology on senior citizens and the importance of new technologies, including broadband, to public housing residents. *See* NY City Council, Committee on Technology in Government, Overview of Hearing on Oct. 28, 2005 (regarding technology and seniors), http://legistar.council.nyc.gov/MeetingDetail.aspx?ID=74352&GUID=E15A71C1-906B-4944-9F6A-F7A5E8CDB0EE&Options=&Search=; Overview of Hearing on Nov. 14, 2005 (technology in public housing), http://legistar.council.nyc.gov/MeetingDetail.aspx?ID=74373&GUID=0130A334-04EE-4C17-BE17-71D41D8CB0BC&Options=&Search=.

(e.g., a municipal broadband network) was necessary.[32] Over the course of the last several years, advisory committee has held public hearings in each of the city's five boroughs in order to gauge levels of broadband availability.[33] The general consensus is that broadband is widely available in the city. However, the extent to which certain populations are adopting and effectively using this technology remains unknown. Since the infrastructure of the advisory committee is still largely intact, this group could extend its inquiry to assess current levels of broadband adoption across the city and develop tailored proposals for bolstering utilization.

- California has been a leader in state-level action regarding broadband deployment and adoption. For example, in 2006, Governor Arnold Schwarzenegger issued an Executive Order that required the formation of a statewide Broadband Task Force to assess current levels of broadband availability and adoption and to propose specific government actions for bolstering both metrics.[34] In 2008, the Task Force issued a final report that outlined a number of recommendations specific to the issue of spurring further broadband adoption.[35] Continuing to monitor broadband adoption and assessing whether its recommendations have been implemented could represent the next logical step for the Task Force or could serve as the basis for the formation of another Task Force to continue forward with this important work.

- Recently, the state-level members of the Federal-State Joint Conference on Advanced Telecommunications Services[36] launched a website that provides a "national inventory of broadband projects and programs, as well as links to other sites which may be of interest to those who are seeking to provide broadband services to the unserved and underserved."[37] Currently, this resource includes information mostly related to state-level broadband deployment efforts. However, the scope of this resource could be expanded to include local and state-level adoption efforts, including the identification of viable nonprofit approaches and innovative public-private collaborations.

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[32] Local Law 126 of 2005, Int. No. 625-A. Additional information is *available at* http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=444034&GUID=F0EA8014-69F5-4F7B-AB88-EEF2F394E5BE&Options=ID|Text|&Search=.

[33] *See* New York City Broadband Advisory Committee, Blog, http://nycbroadband.blogspot.com/.

[34] *See* California Broadband Initiative, California Broadband Task Force, http://www.calink.ca.gov/taskforce/aboutus.asp.

[35] *See The State of Connectivity: Building Innovation Through Broadband*, Final Report of the California Broadband Task Force (Jan. 2008), *available at* http://www.calink.ca.gov/pdf/CBTF_FINAL_Report.pdf.

[36] Additional information regarding the Joint Conference is *available at* http://www.fcc.gov/jointconference/.

[37] *See* BroadbandBestPractices.org, Home, http://communities.nrri.org/web/telecom-broadband-adoption/706-project-home.

Similarly situated legislative or quasi-legislative bodies could leverage existing infrastructures and the data they have collected to date in order to target outreach and education efforts at segments of the population or parts of a state, city or town that have low broadband adoption rates.

IV. CONCLUSION

The value of robust next-generation broadband infrastructure will only be optimized if the broadband adoption rate is maximized. Indeed, enhancing the adoption rate will positively impact every link in the broadband value chain: additional subscribers will demand more advanced tools and services, which will spur additional innovation and competition among content developers and among network service providers. Increasing the broadband adoption rate will also increase usage of broadband-enabled telemedicine services, smart grid applications, and educational tools, the cumulative impacts of which will be enormous individual and economy-wide welfare gains.[38] Thus, the FCC should focus its National Broadband Plan on creating mechanisms for increasing broadband adoption across all user groups and for encouraging further integration of broadband in every sector of the economy. In doing so, however, the Commission must include a clear distinction between the price and affordability of broadband. Moreover, the FCC should also include mechanisms for leveraging the expertise and core competencies of local and state policymakers in order to provide a comprehensive and fully integrated approach to bolstering utilization of broadband. Without such a singular focus on broadband adoption, the FCC risks implementing policies that do not adequately reflect the diverse needs of all user groups.

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[38] *See generally Barriers to Broadband Adoption.*

APPENDIX A

The Impact of Broadband on Senior Citizens
A Report to the U.S. Chamber of Commerce
Prepared by the Advanced Communications Law & Policy Institute
at New York Law School
December 2008

THE IMPACT OF BROADBAND ON SENIOR CITIZENS

A Study Commissioned by the U.S. Chamber of Commerce

DECEMBER 2008

A REPORT TO THE U.S. CHAMBER OF COMMERCE

THE IMPACT OF BROADBAND ON SENIOR CITIZENS

Charles M. Davidson
Michael J. Santorelli

Advanced Communications Law & Policy Institute
at New York Law School

The Advanced Communications Law & Policy Institute ("ACLP") at New York Law School thanks the U.S. Chamber of Commerce for commissioning this report. The ACLP thanks New York Law School Dean Richard Matasar for his continued and unwavering support of the study of those law and policy issues impacting all Americans. And the ACLP is indebted to Senior Fellow Lesley O'Neill and Research Fellow Ann Turner for their invaluable assistance.

Throughout the preparation of this report, the ACLP consulted with a wide variety of organizations, experts, and practitioners that are focused on seniors and technology. The ACLP thanks Tom Kamber, Renee Martinez, and Tracey Halls of OATS for providing access to their training classes and to their vast knowledge and experience with training seniors to use the Internet. In addition, the ACLP thanks: Joy Howell at Broadband Changed my Life!; Lydia Lundberg at Elite Care; Sheila Parkins at Computers4Seniors; Ken Walker at Per Scholas; and Tracy Zitzelberger at ORCAT.

Finally, the ACLP was privileged to have spoken with many seniors directly about their views and uses of broadband. Many are mentioned in the paper, but some wished to remain anonymous. Their input helped put key issues into perspective and provided unique insight into how broadband is positively impacting the lives of older adults.

The views expressed herein are those of the authors and do not represent those of New York Law School.

ABOUT THE U.S. CHAMBER OF COMMERCE

The U.S. Chamber of Commerce is the world's largest business federation representing more than 3 million businesses of all sizes, sectors, and regions. It includes hundreds of associations, thousands of local chambers, and 106 American Chambers of Commerce in 94 countries. Its members include businesses of all sizes and sectors—from large Fortune 500 companies to home-based, one-person operations. In fact, 96 percent of its membership encompasses businesses with fewer than 100 employees.

For more information, please contact:

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ABOUT THE ACLP AT NEW YORK LAW SCHOOL

The Advanced Communications Law & Policy Institute (ACLP) at New York Law School is a public policy program that focuses on identifying and analyzing key legal, policy, and regulatory issues facing the advanced communications sector. ACLP's mission is to promote robust and solution-focused dialogues amongst state and federal policy makers, industry, academe, the financial community, and consumers concerning changes to the state and federal regulatory regimes governing wireline, wireless, broadband, and IP platforms.

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1. EXECUTIVE SUMMARY

Broadband is changing the way people live their lives. It enables all users to enjoy an array of economic, social, and health-related benefits. Broadband brings people closer together, facilitates small business and job creation, lowers transaction costs for consumers, and otherwise provides users with a gateway to the global digital marketplace.

Broadband is widely available throughout much of the United States.[1] Over 100 million broadband lines are currently in service across the nation.[2] And broadband is being adopted at a healthy clip by consumers. Consider that it took nearly 15 years for wireless phones to reach a 50 percent penetration rate in the U.S.; for broadband, it has taken only nine.[3]

As a result of widespread use and robust innovation across the entire sector, broadband is changing the collective perception of the Internet from primarily a medium for entertainment to a vehicle for the delivery and transmission of life-enhancing and lifesaving data and services. Today, Internet surfers using a broadband connection can make phone calls, maintain a blog, launch a business, and buy and sell goods at the click of a button. Users can also access accurate health information, manage finances, pay bills, and keep in regular contact with a healthcare provider.

This paper, the first in a series that will study the practical impact of broadband on select groups of users and applications, focuses on how broadband is impacting the lives of senior citizens and on how government should approach policy making in order to ensure that seniors (and all consumers) continue to enjoy the fruits of competition, innovation, and investment in the broadband market.

1.1 Broadband and Seniors

This paper assesses the myriad impacts that broadband has had and will continue to have on senior citizens. Until recently, many traditional assumptions associated with aging and elder care often cast seniors in a more passive role, not a proactive one. For a variety of economic, sociological, and technological reasons, this paradigm is now shifting. Broadband-enabled technologies are providing seniors with an interactive lifeline to the world, empowering them to live more robust, healthful, and independent lives.

With the senior population set to double in the coming decades, broadband and broadband-enabled technologies are poised to play an invaluable role in transforming senior life and the senior care paradigm. Continued competition, innovation, and

investment in the broadband market will allow current and future generations of seniors to age in place, stay relevant and connected to their communities, and take advantage of lifesaving applications.

1.2 Overview of the Paper

Section II provides a brief overview of current senior demographics and emerging growth trends for this segment, including information on the coming wave of baby boomer retirees. This section then analyzes the wide variety of senior perceptions regarding the Internet and broadband, focusing on four key topics:

- Availability of broadband
- Awareness & Demand for broadband
- Adoption of broadband
- Use of broadband

As an overview, broadband is widely available and seniors are increasingly aware of and demanding it. However, despite increasing adoption, there is a discernible gap between younger seniors who are enthusiastic adopters and older seniors who remain wary of the technology. Section II will also highlight unique approaches to bringing broadband to seniors and spurring demand.

Section III discusses the current roles and impacts of broadband on seniors. Three broad areas are examined:

- The social impacts of broadband on the daily lives of seniors across the country;
- The economic impacts of seniors using broadband, including personal and economy-wide welfare gains; and
- The effects of broadband on senior healthcare and wellbeing.

To assess the real impacts that broadband is having on seniors, this section includes testimonials and case studies of seniors, service providers, and organizations specializing in the field. These real world stories illustrate the practical impacts of broadband and highlight the types of challenges that remain for increasing adoption among a wider swath of seniors.

Section IV discusses the importance of greater broadband availability and technological advances on seniors. Even though broadband is widely available, actual adoption among seniors remains low relative to other age groups. However, as more robust networks are deployed, and as the technology is adopted by an increasing number of

seniors, a tipping point will be reached, spurring even more innovation in senior-specific applications and content.

In the near term, current pilot projects for training seniors and monitoring the efficacy of a variety of senior-specific health services will yield invaluable data regarding the impact of broadband and broadband-enabled technologies on seniors. Moreover, additional technological innovation will produce a rapidly expanding universe of broadband-enabled senior services. More often than not, such programs and inventions will come from the grassroots level with varying amounts of government involvement.

Successes in the near term will enable robust innovation in the long term, producing ever more useful services, devices, and applications, many of which will rely on broadband. Increased availability, demand, adoption, and use of broadband by seniors over the coming decades will transform the senior care paradigm, promote independence, and extend lives.

Section V discusses best practices for individual actors, collaborations, and government actors to encourage adoption and utilization of broadband and broadband-enabled applications among seniors via targeted education programs, to facilitate continued innovation by service and applications providers, and to incorporate broadband technologies into senior care. There are a number of areas where government can and should play a key role in enabling further adoption of broadband, which include a focus on broadband infrastructure, investment, technological innovation, and the advancement of broadband applications and services that are beneficial to seniors.

1.3 Foundational Principles

As discussed more thoroughly below, a number of ***foundational principles*** should drive public policy:

- Broadband is enabling seniors to live better, longer, and more healthful lives by connecting them to their families and the world around them.
- Broadband provides seniors with an interactive lifeline that enables a wide range of economic welfare gains and lifesaving medical services.
- Those seniors who have already adopted broadband are enthusiastic users and are increasingly incorporating it into their daily lives in a number of ways.
- Awareness, adoption, and use of broadband, however, remain fragmented among various generations of seniors. A number of obstacles stand in the way of realizing the full impact of broadband for all seniors.

- Opportunities exist to spur demand among seniors. These include educating seniors on the usefulness of broadband and providing them with options for getting online, be it at home, in a senior center, in a nursing home, the hospital, or the library.
- Opportunities also exist where local, state, and federal government can act to facilitate the continued development and deployment of advanced broadband networks to seniors living in every corner of the United States.
- Substantial investments in next-generation networks will be essential to realize the full range of broadband benefits for seniors.

2. AN OVERVIEW OF BROADBAND & SENIOR CITIZENS

According to a recent report by the Pew Internet & American Life project ("Pew"), 55 percent of homes had adopted broadband by April 2008, up from just 42 percent in March 2006.[4] However, a significant portion of the population remains offline altogether or continues to rely on slower dial-up connections. Pew has found that among those who continue to use dial-up modems to access the Internet, 62 percent have no desire to switch to broadband.[5] Fully 27 percent of adult Americans are non-Internet users.[6] While identifying the reasons for not embracing broadband is challenging, a recent Consumer Electronics report found that *one of the main reasons among consumers for not subscribing to broadband is the lack of a home computer, not lack of available broadband*.[7] Price remains a sticking point for some while a lack of understanding of what broadband is and what it can do also remains a large obstacle.[8]

SNAPSHOT 1
The U.S. Broadband Market

- 100+ million broadband lines in service
- 1,360 different service providers
- 55 percent home adoption, and rising
- Voice, video, and data provided via broadband
- Prices are down four percent since 2005

Sources: FCC; Pew Internet & American Life Project

While broadband use among seniors has increased significantly over the last five years, a large number of seniors, especially those over 70, remain offline. As more senior-oriented services and applications migrate online, and as new tools aimed at enabling seniors to live healthier and more convenient lives are deployed, it is critical that older adults continue to adopt broadband and use it to enhance their lives.

This section will provide an overview of the current senior population and an analysis of the four key features of broadband use: availability, awareness and demand, adoption, and levels of usage.

2.1 *The Senior Population: Demographics and Trends*

Understanding the senior demographic, analyzing population growth trends, and assessing economic well-being provides context for identifying areas where broadband is having or could have a beneficial impact on the lives of older adults.

There are currently 37 million Americans over the age of 65, representing just over 12 percent of the population.[9] The number of seniors grew by 10 percent between 1996 and 2006[10] and is poised to double by 2050, at which time seniors will make up nearly 20 percent of the population.[11] The senior population will also grow significantly as "baby boomers" begin to retire in 2011.[12] According to the U.S. Census Bureau, there are over 78 million boomers in America, making it the largest generation in history.[13] Boomers are also among the most prosperous Americans in the country and, compared to those just over 65, are better off financially in terms of retirement savings.[14] However, this prosperity is tenuous due to a shrinking Social Security fund[15] and other economic worries.[16] These concerns, along with improvements in medicine and healthcare, are changing senior lifestyles in many ways.

For example, more and more seniors, especially older boomers, are working past retirement. The proportion of those aged 55 to 64 in the work force rose to nearly 65 percent in early 2008, up 1.5 percent from the year before.[17] The percentage of those over 65 who are still working recently climbed to 16.2 percent.[18] Many jobs require computer skills and seniors are increasingly enrolling in programs to obtain basic computing skills and Internet training. Along with applications to sharpen mental acuity during aging,[19] training seniors to use computers and the Internet are a boon to employers who often struggle to replace experienced and productive senior managers.[20]

These facts bode well for bringing more seniors to broadband. Many older seniors, however, remain skeptical of the need to use the Internet. But, as the following discussion of broadband use among older adults indicates, there are effective ways and methods of bringing seniors of all ages to broadband. Notably, once connected via broadband, most become enthusiastic users and incorporate it into their lives. The challenge is bridging the gap between awareness and adoption of broadband.

2.2 *An Analysis of Broadband Use Among Senior Citizens*

> ***"Broadband makes my life easier."***
> ~ Alice, 72, Springfield, OH

Alice represents a typical senior broadband user. A relative newcomer to the Internet, she uses her broadband connection to keep in touch with her grandchildren and friends, research topics of interest, and, via email, help produce the weekly bulletin for

her church. For Alice, broadband is *a cheaper and more convenient and affordable option for staying in touch with loved ones and has allowed her to pursue a number of personal interests.* This type of story is increasingly prevalent among seniors who use broadband.

In analyzing the conditions under which a senior begins to use broadband, four discrete issues play a role. ***Availability*** of broadband is the first and perhaps most important factor. If broadband is not available in a given area, then seniors will not have the option of using it. ***Awareness and demand*** is the second factor. If broadband is available, are seniors aware of it? If so, are they demanding it? The analysis will discuss approaches to stimulating demand among seniors. ***Adoption*** of broadband is arguably the most challenging issue. A number of factors (e.g., access to a computer, cost, etc.) contribute to a relatively low adoption rate among seniors even though awareness of and demand for broadband might be higher. However, adoption rates continue to rise due to innovative approaches and programs aimed at educating seniors about broadband. Finally, the amount and types of ***Usage*** will be discussed. (See Snapshot 2 for an overview.)

SNAPSHOT 2
An Overview of the Availability, Awareness/Demand, Adoption, and Use of Broadband by Senior Citizens

Availability	*Awareness & Demand*	*Adoption*	*Usage*
▪ Physical access to broadband for seniors tracks that of the general population ▪ Broadband is widely available ▪ Seniors living in rural areas likely have less access to broadband than other seniors.	▪ Awareness of and demand for broadband is increasing among seniors ▪ There is a gap between younger and older seniors regarding both awareness and demand.	▪ 19% of seniors have adopted broadband at home (Pew). ▪ 65% of seniors remain offline (Pew). ▪ Unique local approaches are effective in increasing adoption of broadband by seniors.	▪ Top uses include searching for health information and keeping in touch with loved ones. ▪ A variety of broadband-enabled tools and services enhance mental acuity among seniors.

2.2.1 Availability of Broadband

Broadband is widely available throughout the United States. Indeed, it is unavailable in only 0.1 percent of zip codes nationwide.[21] The number of broadband lines in service, the types of platforms over which broadband is provided, and the number of different service providers have all increased over the last several years. Nonetheless, some concerns exist that broadband is not sufficiently ubiquitous.[22]

Rural access to advanced communications services has long been a primary concern of policy makers. Broadband penetration is expectedly lower in some sparsely populated areas of the country but, according to the FCC, *competition for customers has driven deployment to most parts of the country.*[23] The U.S. Internet Industry Association ("USIIA") has also found that "the deployment gap between metropolitan and rural areas is closing."[24] Similarly, the National Telecommunications Cooperative Association ("NTCA"), the "voice" of rural telecommunications,[25] recently announced that 91 percent of customers in its 2008 Broadband Availability Survey area had access to broadband.[26] And as the FCC recently observed, "[t]he percentage of the lowest density zip codes with at least one high-speed subscriber increased from 73.5 percent in December 2003 to 90.5 percent as of June 2007."[27]

Seniors are somewhat more likely than the average U.S. resident to live in a rural part of the country. According to the United States Department of Agriculture ("USDA") some 15 percent of seniors live in rural areas, compared with just 12 percent of the general population.[28] In addition, the USDA has observed that, compared to their more urban counterparts, rural seniors "generally have less income, lower educational attainment, and a higher dependence on social security income."[29] Thus, adoption of broadband by rural seniors is especially important because of the many social, economic, and healthcare-related benefits it can deliver. Yet the USIIA has concluded that *lack of demand and adoption, rather than lack of availability, is the chief issue of concern regarding rural broadband efforts.*[30] As a result, it is essential that education and outreach efforts be targeted at rural seniors in order to spur adoption.

Availability of broadband for seniors does not appear to be the primary issue of concern. Rather, as subsequent sections will detail, raising the awareness of and demand for broadband and increasing adoption rates is of paramount concern.

2.2.2 Awareness of and Demand for Broadband

Measuring the awareness of and demand for broadband among seniors is more difficult than assessing its availability or adoption. Although a number of public and private organizations have been launched to assess and spur demand at the state and local levels,[31] many of these efforts, unfortunately, are not focused specifically on seniors. Their general conclusions and observations are helpful, nonetheless, in assessing awareness and demand among groups of people that, for many different reasons, remain unconnected.

Connect Kentucky, a public-private partnership focused on spurring broadband deployment and adoption across the mostly rural state of Kentucky, has noted that a key factor in its successes over the years has been the creation of local eCommunity Leadership Teams to educate consumers on the benefits associated with broadband.[32] More than half of the residents who eventually adopted broadband did so after learning

about the many benefits of broadband Internet access.[33] California's Broadband Taskforce has recommended a number of digital literacy programs and initiatives, including a statewide education campaign to notify all residents of the benefits of broadband.[34] Similarly, the FCC's Consumer & Governmental Affairs Bureau is home to a comprehensive broadband outreach campaign to help foster broadband development by increasing consumer awareness about the benefits and availability of broadband.[35] *Measuring the success of these and other endeavors is complex, but broadband subscriptions have consistently increased in each of the fifty states over the last few years.*[36] Local, community-based initiatives, supported by state and federal agencies, have been the most successful.

A number of trends are evident among older Americans. First, seniors generally are less likely than other adults to own a computer.[37] As the Consumer Electronics Association has observed, "[a]dults over the age of 65 are 21 percent less likely to own a home computer than adults under the age of 30."[38] Notably, *lack of a computer, and not lack of available broadband, is the primary reason for not having broadband at home across every age group and demographic*.[39]

SNAPSHOT 3
Varying Perspectives on the "Gray" Gap

"Broadband is opening a whole new world for me. It's not about what should be, it's about the real world. And broadband is the real world."
~ Hy, 69, Brooklyn, NY

"I felt like I was being left in the dust [without broadband]."
~ Barbara, 77, Averne, NY

"I tried it but it wasn't for me."
~ Bob, 78, Orlando, FL

"Why do I need it? I've gotten along without it."
~ Carmela, 85, Bronx, NY

Second, in general, seniors are becoming increasingly aware of the Internet. As a result, demand for it is similarly increasing. Awareness and demand can be measured by how many seniors have used the Internet. This measure includes those who have adopted broadband and those who have logged on but, for some reason, have yet to fully integrate it into their lives. According to a number of surveys, *senior awareness and demand for broadband has increased significantly over the last decade.* In 1996, only 2 percent of those over 65 went online.[40] By 2000, that number rose to 15 percent.[41] In 2004, 22 percent of seniors had gone online.[42] By 2006, that number was up to 34 percent.[43]

Third, older seniors are less likely to go online than younger seniors. In 2006 more than half of people in their 60s had gone online, compared to just 28 percent of those over 70.[44] Older seniors are more likely to either have a dial-up connection or be completely

offline.[45] Thus, a "gray" gap exists between older and younger seniors.[46] Fourth, anecdotal data suggests that there is wide variation among seniors vis-à-vis their awareness of and demand for broadband (see Snapshot 3).

In light of the above, outreach efforts should focus on increasing meaningful access to computers. Similarly, public and private sector efforts need to focus on educating all seniors about the benefits of broadband in order to spur demand and adoption. Local efforts, like Connect Kentucky, and national endeavors like the Alliance for Public Technology's "Broadband Changed my Life!" campaign,[47] are examples of successful approaches. Additional outreach efforts might be focused on older seniors in the short term in order to close the "gray" gap.

2.2.3 Adoption of Broadband

Adoption of broadband, which usually refers to the in-home installation of the service, is generally lower among seniors than among any other age group. Two main factors account for this. First, broadband demand is usually lower among seniors. Second, seniors are less likely to live in a traditional household than younger generations. Even though the vast majority of adults over 65 live at home, 4.4 percent live in nursing homes.[48] These numbers vary widely among seniors. Only 1.3 percent of seniors between 65 and 74 are in nursing homes; this number rises to 15. 4 percent for those over age 85.[49] Thirty percent of seniors live alone.[50]

Overall, there are three key conclusions regarding the adoption of broadband by seniors. First, the adoption rate among seniors is increasing. Indeed, Pew has observed a significant increase in home adoption of broadband among seniors over the last four years (see Chart 1).

CHART 1

Age Group	% Increase in Broadband Adoption 2005-2008
18-29	84.2
30-49	91.7
50-64	85.5
65+	137.5

Source: Pew[51]

Across all households, 55 percent have adopted broadband.[52] Over the next few years, it is estimated that an additional 20 percent of households, or forty-four million adults, will adopt broadband in their homes.[53]

Yet while broadband adoption among seniors is increasing, only 35 percent have actively adopted it.[54] Closing this gap remains the largest obstacle to unleashing the power of broadband for seniors.

> ***"I have broadband! I started out with dial-up and hated it! I changed over the first six months after owning my computer. I love my high-speed Internet, even though I don't like the monthly cost."***
>
> ~ Joan, 73, Valparaiso, IN

Second, a significant barrier to increased adoption is price. Even though broadband prices continue to decrease, *many seniors live on fixed incomes*. The median income for seniors in 2006 was $23,500 for males and $13,603 for females.[55] For households headed by someone over the age of 65, median income in 2007 was $28,305.[56] By way of comparison, the median income for households headed by someone under the age of 65 was $56,545 in 2007.[57] With the average price of broadband service around $38 per month,[58] compared to $11.99 per month for AOL dial-up,[59] many seniors are opting for the slower but cheaper alternative. Moreover, free dial-up is available in a number of cities like New York.[60] Thus, a key challenge is helping seniors understand that spending an additional $26-38 per month may be worthwhile and could potentially be offset by cost-savings enabled by their broadband connection (e.g., access to cheaper prescription drugs). Once seniors experience the difference between dial-up and broadband, many opt to pay more for the better, more reliable, feature-rich, and less frustrating service.

Third, educating seniors on the benefits of broadband is important to increasing adoption rates. The FCC has observed that "subscribership to broadband services continues to increase steadily as new broadband-dependent services and applications emerge in the marketplace, and that subscribership growth is important due to its relationship with deployment."[61] Demand stimulation and education efforts have positively impacted broadband adoption. In Kentucky, where Connect Kentucky has worked to create demand and tailor supply to bring broadband to unserved areas, availability increased from 60 percent in 2004 to 95 percent in 2007, while adoption increased 83 percent between 2005 and 2007.[62]

Local senior-specific efforts have been similarly successful (see Case Study 1). *These efforts appear to be the most effective means for initially bringing seniors to broadband and encouraging adoption, while national efforts provide critical ancillary support.*

CASE STUDY 1
Older Adults Technology Services ("OATS")

Based in Brooklyn, NY, OATS (www.oatsny.org) is a nonprofit organization that seeks to engage, train, and support older adults in using technology to improve their quality of life and enhance their social and civic engagement. Founded in 2004 by Tom Kamber, OATS employs a teaching model that is specifically tailored to seniors. Broadband, according to Kamber, has made his job easier. Increased Internet connection speeds have decreased the frustration of his students.

In its first two years, OATS taught 491 free classes and special seminars to over 1,170 seniors at nearly 20 locations across New York City. Over the last year, OATS has expanded and now trains upwards of 1,300 older adults per year. OATS works exclusively in senior and technology centers that are wired with broadband. OATS offers a variety of classes: a Basics class that introduces seniors to the computer and the Internet; Advanced class for seniors who want to continue honing their skills; and a Workforce Training program that prepares seniors to continue working or go back to work.

OATS has also partnered with Per Scholas (www.perscholas.org), a computer recycling company based in New York City, to provide free computers to seniors who complete a 10-week training course. After seniors graduate, Per Scholas delivers and installs a computer in the senior's home. The expectation is that seniors will subscribe to broadband after having experienced it in their class. However, Ken Walker, a Vice President at Per Scholas, notes that broadband remains too expensive for many seniors even after they receive a free computer.

Overall, OATS has been very successful in training seniors to access and use the Internet via a broadband connection. According to Kamber, most of OATS's students are in their 70s and half are below the poverty line. Based on direct student feedback, after their training seniors are much more confident in their ability to use the Internet, which in turn increases their confidence to live independently. The majority of students (75 percent) also say their new Internet skills have made them more connected with their family and friends.

2.2.4 Broadband Usage

Seniors who have adopted broadband use it for a wide array of purposes. In 2001, it was observed that the small percentage of seniors who used the Internet on a regular basis were enthusiastic participants in the burgeoning digital marketplace.[63] The most popular application was email, followed by personal research and reading the news.[64] By 2004, while email and personal searches remained the most popular applications for seniors, but looking for health information rose in prominence.[65] In 2006, Pew found that 68 percent of senior users searched for health information online, up from 60

percent in 2004.[66] The most popular health searches among seniors were for information on Medicare and Medicaid.[67]

> ***"I use the Internet everyday. My top use would be e-mail (for the two businesses in which I am involved). Second would be financial management (bank account, payments, investments), and third would be shopping (mainly organizing trips, buying books or Christmas presents). Broadband has greatly expanded the horizons of information to which I now have access."***
>
> ~ Nancy, 67, Yorktown, NY

Moreover, seniors use the Internet as a tool to improve their lives and to allay age-related fears. For example, in 2006 nearly 60 percent of seniors worried about staying "mentally sharp."[68] As a result of increased use and adoption, a number of senior-specific cognitive tools have been put online. Online resources like Crayons for Codgers (http://crayonsforcodgers.home.mindspring.com/) are specifically tailored to sharpen mental acuity. And, as seniors become more confident in their uses of broadband, they are more likely to become active contributors to the web by generating their own content. Senior-authored blogs, for example, are increasingly common. Senior Planet (www.seniorplanet.org) is an online resource where seniors can post blog entries, events, and other items of interest to the community.

The impacts that broadband is having on seniors will be discussed in detail in the next section. As an overview, broadband is enabling seniors to participate more fully in society. Broadband provides an interactive link with family, friends, and communities. Seniors are increasingly using their broadband connections to participate in an array of activities, from finding information on elections,[69] to making travel arrangements,[70] to managing their finances.[71] Increased adoption will serve to spur additional uses and encourage a closer integration of the technology into the lives of senior citizens.

2.3 Conclusions

The data cited and observations made in this section support a number of conclusions:

- Broadband is widely available to all U.S. residents including seniors. Rural access to broadband is also increasing, raising the need for more targeted education efforts to spur demand and awareness of the benefits of broadband among rural seniors and other rural residents.
- Seniors are aware of broadband, and senior demand for it is increasing. Moreover, once online, older adults are enthusiastic and capable users.

- Adoption of broadband among seniors continues to increase at a healthy rate each year. A number of obstacles, though, including the lack of computers among seniors and price, present challenges to more robust adoption. However, more aggressive education and outreach efforts could help to further spur demand, adoption, and use, particularly among lower-income seniors.
- Grassroots education efforts like Connect Kentucky and OATS have been very successful in bringing seniors to broadband. Public sector support, which includes both funding and the acknowledgement of the real power of broadband by policy makers, is an important complimentary measure to bringing more seniors to broadband.
- Enhanced public and private education and outreach efforts are likely required to spur awareness of and demand for broadband among senior citizens, especially older seniors.

3. THE CURRENT ROLE & IMPACT OF BROADBAND ON SENIORS

Broadband has emerged as a vehicle through which advanced services and applications can be delivered to seniors. This section will examine the impact of broadband on three core aspects of senior life.

First, the social impact of broadband on seniors will be discussed. Broadband is allowing a growing segment of the senior population to stay in touch with family and friends and to reconnect with their communities. These basic functions have had enormously positive effects on seniors.

Second, the economic impact of broadband on seniors will be examined. In addition to helping seniors save money on a wide array of items, broadband is also allowing older adults to manage retirement funds online, cut prescription drug costs, and work from home. Economic welfare gains have been observed for individual seniors and the wider economy. The impact of broadband is real and measurable and will continue to expand over the coming decades as more seniors adopt broadband and use it to extend their careers and facilitate a broad range of cost savings.

Third, this section will examine the impact that broadband has had on senior healthcare and wellbeing. Broadband is shifting the traditional elder care paradigm and has the potential to radically transform the senior healthcare system. With adoption rates continuing to increase among seniors, and with the rising tide of tech-savvy baby boomers on the verge of cresting into retirement, broadband is poised to be one of a handful of critical tools necessary for aging seniors in the 21st-century. (See Snapshot 4 for a summary of impacts.)

SNAPSHOT 4
The Social, Economic, and Health-related Impacts of Broadband on Senior Citizens

Social Impact	*Economic Impact*	*Impact on Healthcare & Well-Being*
▪ Broadband increases connectivity with family and friends. ▪ Broadband fosters feelings of relevance and provides seniors with an interactive outlet to the world. ▪ Enhancing personal communications can decrease feelings of depression and isolation.	▪ Individual economic gains include: e-commerce; managing personal finances online; savings on prescription drugs; and enhanced employment opportunities. ▪ Economy-wide gains include increases in: small business creation; seniors in the workforce; senior-oriented content and applications; and healthcare savings.	▪ Broadband is enhancing senior wellness and preventive care. ▪ Broadband is enabling lifesaving and life-enhancing telemedicine services like in-home monitoring. ▪ The potential for broadband-enabled healthcare services and applications is tremendous.

3.1 The Social Impact of Broadband on Seniors

> ***"The Internet is my lifeline to the world!!!"***
> ~ Joan, 73, Valparaiso, IN

Joan's enthusiasm for the Internet has been enhanced by her broadband connection. She subscribes to newsletters on Alzheimer's, pharmaceuticals, and one from the Mayo Clinic, and recently joined Facebook. She also regularly keeps in touch with family and friends via email and looks forward to the day when her youngest grandchildren can email her back. "It won't be long," she says.

Hy, 69, of Brooklyn, New York, agrees that broadband is "opening up a whole new world." He uses his broadband connection and new computer to stay in touch with family and friends and to meet new people. Sandy, 70, of New York, New York is also an enthusiastic subscriber who uses broadband to make business and personal contacts and "keep in better touch."

Similar stories are common among seniors who have adopted broadband.

Broadband is empowering seniors to remain connected – and feel connected. Feelings of isolation are pervasive among many older adults. With some 30 percent (nearly 11 million) of non-institutionalized seniors living alone, feeling disconnected and remote from family, friends, and community is common and can lead to depression or a host of other debilitating diseases. Studies have found that seniors who master computer skills appear to have fewer depressive symptoms than those who remain technologically unconnected[72] and that increased integration through social support services can protect against some mortality risks and lead to better mental health.[73] Anecdotal evidence also supports this. For example, broadband-enabled web-cams are an increasingly popular (and affordable) way for seniors to stay in touch with children and grandchildren who live far away.[74]

Broadband is enabling an array of senior interactions with people and the community via email, chat rooms, blogs, and news sites and has enabled them to participate in a host of activities that might otherwise be out of reach. Tom Kamber of OATS has found that *increased social integration and interaction via broadband increases feelings of relevance among seniors*. This, in turn, empowers seniors and provides them with confidence to live more independently.

Seniors are also empowered to make better informed life decisions by the availability of online content specifically tailored for them. AARP's website, for example, contains a universe of content, applications, and services for adults over the age of 50 (www.aarp.org). AARP also includes technology information like tips on buying a computer and basic web lessons.[75] Other senior-centric sites include Senior Journal (www.seniorjournal.com), Senior Net (www.seniornet.org), and Elder Web (www.elderweb.com).

Blogs are yet another tool for seniors to reconnect with the community[76] and stay mentally sharp.[77] The number of blogs either targeted at the senior population or authored by seniors continues to increase. One blog, tech4seniors.blogspot.com, is billed as "A place for Senior Citizens to learn and embrace Twenty-First Century technology." Another senior blog, Senior Planet (www.seniorplanet.org), provides a forum for seniors to interact and chat with each other.

Broadband also positively impacts seniors by bringing them together for training classes. Most classes are taught at local senior centers and offer seniors a more interactive, hands-on activity than more traditional programs. Small class sizes, like the six student cap imposed by Computers4Seniors in Cobb County, Georgia, fosters a sense of community among fellow students.[78] Computers4Seniors relies on volunteers to train seniors. Oftentimes, the volunteers, according to Program Director Sheila Parkins, are retirees of local technology companies like Lockheed Martin or IBM.

Conversely, OATS in New York has developed an intergenerational program that allows high school students to teach computer and Internet skills to seniors. The high school students are able to hone their communications and teaching skills while the seniors gain insight and share in their younger counterparts' enthusiasm for the web.[79] One of the program's participants said that "[t]he best part of the program is coming on Tuesday and Friday and being with friends and neighbors." [80]

Broadband holds much promise for keeping (or reconnecting) seniors to society and warding off feelings of isolation and depression. These benefits are especially relevant to older seniors as mental and physical health tends to decline at a much faster rate over the age of 80.[81] *With a large number of older adults remaining offline or tethered to slower dial-up connections, bridging the gap between wired and unwired seniors presents a challenge*.

3.2 The Economic Impact of Broadband on Seniors

The economic impact of broadband on individuals of all ages and on the entire U.S. economy is real, measurable, and well documented. Broadband impacts job creation, spurs small business creation, facilitates robust e-commerce, saves money, increases efficiency, and has quickly become the critical information backbone for our globalized world.[82] A recent study prepared for the Department of Commerce found a direct correlation between broadband availability and economic growth.[83] Similarly, Connected Nation, the parent organization of Connect Kentucky, estimates that a seven percentage point increase in broadband adoption "could result in $92 billion through an additional 2.4 million jobs per year created, $662 million saved per year in reduced healthcare costs…and $134 billion per year in total direct economic impact of accelerating broadband across the United States."[84]

As discussed below, broadband has positive economic impacts on seniors. Older adults are using broadband to facilitate personal economic gains, which have a cumulative impact on the wider economy. The economic impact has been profound for those seniors already online, presaging even more robust gains as more seniors adopt broadband.

3.2.1 Individual Economic Gains

The individual economic gains for seniors due to broadband range from discounts on items bought online to savings on prescription drugs to allowing a senior to telecommute to work, to reducing the transaction costs of even the smallest of tasks – e.g., food shopping.[85] This section will explore additional ways that broadband facilitates economic gains for seniors.

3.2.1.1 *E-Commerce*

One of the most popular economic applications of broadband across all demographics is participating in e-commerce, which allows for easy ordering and delivery of a nearly infinite array of goods and services online. In the second quarter of 2008, the Census Bureau found that e-commerce sales accounted for 3.3 percent of total retail sales in the United States, up from approximately one percent in 2000.[86] By 2008, two-thirds of American Internet users had purchased something online.[87]

Shopping online provides all consumers with access to discounted items, novel product information, and the ability to easily compare prices before purchasing. Thus, for those living on a fixed income, using a broadband connection to shop online could result in cost savings, which in turn could offset part or all of the monthly cost of a broadband connection. Seniors, however, represent the smallest segment of those who have made purchases online.[88] Older adults tend to be warier of providing personal information online and skeptical about whether shopping online saves time.[89] Moreover, Pew observes a correlation between connection speed and online shopping: "People with broadband at home are more likely than dial-up users to have bought something online, by a 74 percent to 59 percent margin."[90] Educating seniors on the potential cost-savings associated with shopping online and the many security apparatuses that have been implemented to ensure the safe transmission of personal information could spur additional use of broadband for these and other purposes.

3.2.1.2 *Drug Cost Savings*

Broadband facilitates the easy comparison of prices for many prescription drugs. For example, in 2004 *Checkbook* magazine found vast price differences among prescription drugs within the same metropolitan areas and concluded that online retailers often offered lower prices for certain drugs.[91] A wide array of online resources has been developed for seniors who are looking for affordable prescription drugs. *AARP, for example, has partnered with Walgreens to provide seniors with an online portal to purchase discounted drugs*.[92]

Another key area where broadband has had a real and practical impact on seniors is in *navigating the Medicare website to order prescription drugs and manage benefits.* Reforms implemented on January 1, 2006 created a new system that, while providing seniors with a number of new options, flooded participants with a deluge of information. Indeed, by 2008 there were some 1,824 different stand-alone plans available.[93] Unfortunately, the large number of choices and relatively poor customer service provided by the Medicare Helpline caused much confusion among seniors.[94] Participants in the plan were directed to the online portal to register and submit plan choices. This move assumed a certain level of facility with computers and the Internet. Fortunately, local organizations provided training to seniors to assist in the application

process. OATS of New York, for example, operated 28 clinics at six locations in Manhattan and the Bronx and helped lower-income seniors save a total of $19,000 on their drug costs.[95] Peer counselors were used to provide seniors with intra-generational support. As peer counselor Areatha, 77, of New York, observed: "With so few seniors using the Internet today, these peer counseling clinics are the best way for a lot of people to get the information they need."[96]

3.2.1.3 Managing Personal Finances

Broadband also appeals to older adults who wish to manage their personal finances. A wide range of broadband-enabled activities have been observed, ranging from checking bank account balances online to having bills paid automatically to managing retirement portfolios. Participation in these activities by seniors who have adopted broadband is robust and continues to increase.

AARP recently found that nearly three-quarters of retired workers received the majority of their retirement income from Social Security.[97] Forty percent received some form of pension from an employer and about 27 percent received income from an IRA or company-sponsored 401(k).[98] However, Merrill Lynch observed a shift in the traditional model of retirement among older boomers and younger seniors. In a 2005 report, Merrill found that "the majority of boomers relate that they plan to keep working and earning in retirement."[99] Yet these more affluent and younger seniors tend to worry about running out of money due to unforeseen illness or having to care for loved ones.[100] As a result of these worries and the opportunity to work past retirement, *many seniors are actively using their Internet connections to manage a growing variety of investments in order to assure a secure retirement.*

> ***"You can't trade stocks effectively with a dial-up connection, especially since most of these sites stream real-time market data."***
> ~ John, 65, Dallas, TX

John, 65, of Dallas, TX exemplifies the savvier segment of older adults who actively use their broadband connections to manage retirement savings and other investments. John first started using the Internet in the early 1990s. "At that time, my company was just beginning to go paperless. We got in a shipment of laptops and they slowly began giving them to us," he remembers. As a salesman who worked mostly from home, John was an early adopter of the Internet. John is currently semi-retired (he continues to freelance from home, which is facilitated by his broadband connection) and uses broadband to manage investments. John observes that his broadband connection has allowed him to seize control of his portfolio. He supplements prior financial knowledge with e-newsletters from providers like Investor's Business Daily, Morningstar, and Kiplinger's. John estimates that he saves quite a bit of money by being his own financial

planner. "There are no commissions or fees when you cut out the middle man. Only subscription fees for the newsletters and trading services."

Recent economic uncertainty has decreased optimism among many seniors for a comfortable retirement. Many are postponing retirement in order to continue working and adding to their savings.[101] Broadband-enabled personal financial services and applications are increasingly essential to seniors in this endeavor. *They empower older adults to take control of their portfolios and have a stake in the allocation of their funds.* Seniors can save money and quickly shift strategies, all from the comfort of their home.

3.2.1.4 Employment Opportunities Extended

Broadband is enabling seniors to extend their careers past retirement age or embark upon new careers via the Internet. This is important in light of workforce projections that predict a shortfall in experienced, management-level workers in the coming years.

The Bureau of Labor Statistics (BLS) has estimated that the U.S. economy will add 18.9 million jobs in the decade ending in 2014.[102] Yet, over the same period, nearly 36 million workers are expected to leave their jobs permanently and will need to be replaced.[103] According to AARP, older adults are poised and willing to work past retirement: "69 percent of workers [between the ages of] 45 to 74 plan to work during retirement years. Many want to work on different terms, with more flexibility and autonomy than during earlier careers. *Seventy percent of older workers say they are looking for ways to balance work and their personal lives, and 41 percent report that the ability to work from home is an absolutely essential part of their ideal job."*[104] A recent report issued by the Taskforce on the Aging of the American Workforce observed that the supply of seniors in the workforce will increase significantly over the next decade 2014, rising by 74 percent between 2004 and 2014.[105] *As AARP concluded, broadband will play a major role in extending the careers of seniors.*[106] A key component of such is telecommuting.

Broadband has facilitated the deployment of telecommuting programs in offices across the country. Indeed, some 42 percent of employers currently offer employees a telework option, up from 30 percent in 2007.[107] Gartner estimates that 12 million people telework more than eight hours per week, double the amount in 2000.[108] By 2009, Gartner expects this number to reach 14 million.[109] The Taskforce on the Aging of the American Workforce has recommended that employers promote telework and flexible retirement options for older workers in order to retain them[110] and continue benefiting from their managerial experience and expertise.[111]

3.2.2 Economy-Wide Welfare Gains

It is widely accepted that broadband will produce enormous consumer welfare gains across the entire economy. One study, from 2001, estimated that these gains would

amount to $400 billion annually.[112] Recent studies have projected lower annual gains, but estimates remain in the hundreds of billions of dollars.[113] The cumulative expected impact of individual welfare gains by seniors using broadband on the wider economy is similarly impressive. According to a 2005 study, *the aggregate cost savings due to the use of broadband by seniors and in the care of seniors was estimated to be between $532 billion and $847 billion by 2030*.[114] This estimate includes savings realized from increased efficiencies in health care and the economic impact of having more seniors in the workforce.

In addition, broadband stimulates small business creation and promotes entrepreneurship among seniors by lowering the costs of starting and running a business. For example, Barbara, 77, uses her broadband connection to support her career as a public speaker (www.barbarahillary.com). She uses her website to publicize her experience and to solicit speaking offers. Senior Net partnered with eBay in 2000 to provide computer and Internet training for seniors who wished to use eBay as a vehicle for selling possessions or hand-made goods.[115]

Moreover, the business of bringing seniors to broadband is thriving. A growing number of small businesses and nonprofit organizations have been established in response to increasing demand for broadband and computer skills by seniors. Similarly, senior-oriented services are thriving due in large part to the rapidly increasing demand for and adoption of broadband. It has been observed that seniors, unlike their younger counterparts, represent a "sticky" demographic from a marketing perspective, meaning that seniors are more likely to be more loyal users of certain services and not switch as rapidly or be as fickle as younger users.[116] This has spurred investment in senior-specific websites and online services.[117]

Recent economic uncertainty, however, threatens to slow the economic gains of seniors.[118] The number of seniors living in poverty[119] or who have declared bankruptcy[120] has increased in recent years, especially among older seniors. *These trends highlight the importance of broadband as an interactive tool that can be used to take control of one's financial well-being*. Broadband enables seniors to save money on a variety of items including prescription drugs, to continue working, and to put them in direct control of their finances. As such, educating seniors on the benefits of broadband for them is of critical importance.

3.3 The Impact of Broadband on Senior Wellbeing and Healthcare

Broadband and the universe of applications enabled by it are transforming the way technology is used in caring for aging adults. Indeed, broadband has sparked a reassessment of many of the perceptions associated with elder care. For example, personal wellness systems – services that use technology to promptly address the deleterious aspects of aging – are increasingly popular and are replacing older models

of senior healthcare that seemed to focus more on easing seniors into the last phases of their lives. Moreover, a wide range of broadband-enabled tools and services are being developed to augment the nation's approach to senior healthcare.

The transformation of senior healthcare is inextricably linked to a renewed focus on senior wellbeing. Senior wellbeing refers to the ways in which older adults prepare for and counteract the effects of aging. The traditional approach relies largely on passive techniques like "managing illness," which is reactive to health crises.[121] The new focus, however, is on "maintaining wellness," which represents a more holistic approach to the aging process.[122] From a healthcare perspective, broadband allows seniors and their caregivers to "personalize and 'consumerize' health and wellness technologies."[123] From a wellbeing standpoint, broadband empowers individuals by providing them with tools to maintain and improve mental and physical health.

This section will detail how broadband is becoming an indispensable tool for seniors who wish to increase their personal wellbeing and for the healthcare industry as it prepares to care for larger numbers of senior citizens. The interactive and real-time nature of broadband makes it one of the important innovations in U.S. healthcare.

3.3.1 Broadband & Senior Wellbeing

Broadband and broadband-enabled technologies are being used to enhance senior wellbeing in three important ways.

First, broadband Internet access provides seniors with a critical outlet for obtaining increasingly sophisticated medical and health information and allows them to be preemptive and interactive in their efforts to combat the harmful effects of aging.

In 2006, Pew estimated that nearly 70 percent of adults over the age of 65 and 80 percent of boomers used the Internet to find medical information.[124] A 2005 report issued by the Kaiser Family Foundation concluded that seniors have the most to gain from online health and medical resources because seniors "face a greater number of health conditions and use prescription drugs and health care services at a far higher rate than younger adults."[125] Seniors with broadband connections are more likely to go online for health information than those with dial-up connections.[126]

In response to increasing demand for online health and medical information among seniors and older baby boomers,[127] a number of broadband-enabled resources have been deployed. Sites like WebMD (www.webmd.com) and Family Doctor (www.familydoctor.org) provide general health information for all users and have solid reputations for providing accurate and up-to-date entries. Senior-specific health portals have also been deployed and have been well received. The Mayo Health Clinic, for example, has a dedicated Senior Health Center (www.mayoclinic.com/health/senior-

health/HA99999) that provides pertinent information on a wide range of common senior ailments and diseases. AARP recently launched four new online tools specifically tailored to enable seniors to "do everything from choose an excellent doctor or hospital, to better understand and evaluate their own health symptoms, conditions and medicines."[128] The National Institute of Health ("NIH") also has a web portal dedicated to senior health information (http://nihseniorhealth.gov/). These and a wide range of additional broadband-enabled tools are providing seniors with reliable, current, and lifesaving information.

Second, broadband and broadband-enabled applications are being used to help sharpen brain function among seniors. Many experts agree that since "older" brains retain a large amount of "semantic memory" (e.g., facts and figures) and "expert knowledge" (i.e. specialized information re a particular skill or hobby), mental functions can be kept sharp by targeted brain exercises.[129] As a result, broadband-enabled brain exercises are increasingly popular online destinations for seniors. These include tools created by Spry, Posit Science, and MindFit, among many others.[130] Other broadband-enabled activities include participating in online multiplayer games like Second Life[131] and fitness games on gaming consoles like the Nintendo Wii, which is extremely popular with seniors.[132]

Brain exercises in general have been found to delay cognitive decline and the onset of dementia and Alzheimer's.[133] It has been estimated that such diseases "cost the United States more than $148 billion annually in Medicaid and Medicare services and in indirect costs to businesses that employ [Alzheimer's] and dementia caregivers."[134] Intervening in the development of the disease can contribute to delaying the onset of Alzheimer's and other dementia. It was recently estimated that "interventions that could delay the onset of Alzheimer's disease by as little as one year would reduce prevalence of the disease by 12 million fewer cases in 2050."[135]

Third, broadband and broadband-enabled content empowers older adults with information, provides them with a vehicle for participating in their community, improves mental health, and enables them to live more independently. The result is a shift in the paradigm for elder care, one that supports more seniors aging in place and that decreases senior dependence on caregivers and on other aspects of the traditional healthcare model, all of which will have measurable social and economic impacts.

3.3.2 Broadband & Senior Healthcare

Approximately 60 percent of all health care spending in the United States is spent on seniors.[136] By one estimate, among people turning 65 today, 69 percent will need some form of long-term care.[137] With the population of seniors expected to double in the coming decades, senior health care will become more costly. Recent innovations, driven

by wider broadband availability, have the potential to radically transform the current senior healthcare paradigm.

It has been estimated that broadband-based health resources can save some $927 billion in health care costs for seniors and people with disabilities.[138] A large percentage of these cost-savings will be realized via the development and deployment of broadband-enabled telemedicine services, specifically in-home health monitoring technologies and other remote care services. These innovations, which largely rely on a reliable broadband connection to link doctor and patient, have the potential to transform elder care by lowering healthcare costs, increasing the efficient use of health care professionals, and freeing seniors from the strictures of traditional senior care.[139]

3.3.2.1 In-Home Monitoring Technologies

Many in-home monitoring systems use wireless sensors to track a senior's movements, record falls, and upload health information to a web-based interface that is accessible by caregivers and family members. *Broadband is being used to augment these systems by providing real-time data transmission capabilities*. For example, a series of pilot projects at the Oregon Center for Aging & Technology ("ORCAT") are using broadband-enabled real-time monitoring in order to gather critical cognitive and mobility data in an effort to detect mental decline at an early stage (see Case Study 2). As these technologies progress, more robust broadband networks will enable more intelligent software to analyze personal health data and send out alerts to caregivers.[140]

The falling prices of sensors and other technologies related to in-home monitoring, along with the convenience associated with these systems for seniors, caregivers, and family members, have spurred interest in and demand for such services.[141] *One study projects the market for monitoring services will become a $2 billion per year industry by 2010*.[142] The same study estimates that 3.4 million seniors will be using networked sensor applications to monitor and improve their health by 2012.[143] And even though seniors have expressed privacy concerns regarding the use of tracking devices, AARP found that a majority would consider subscribing to these services so long as they were affordable.[144]

The use of broadband-enabled in-home monitoring technologies has many positive impacts on seniors and the wider healthcare industry. From an economic standpoint, the cost savings associated with more widespread use could be significant. Consider that the average cost for a private room in a nursing home is $213 per day or $77,745 annually.[145] The average monthly cost of living in an assisted living facility is $2,969 or $35,628 annually.[146] And the average hourly rate for a certified home health aide is $32.37.[147] Medicare and Medicaid pay for the vast majority of long-term care.[148] Effective implementation of an in-home monitoring system could reduce or eliminate certain expenses for many seniors, and the concomitant burden on federal funds, at

least for a period of time. From a wellbeing standpoint, aging in place offers many seniors a more comfortable and mentally rewarding lifestyle. Moreover, these innovative new technologies enable seniors to monitor their health in real-time and potentially preempt fatal or degenerative disease.

CASE STUDY 2
Oregon Center for Aging & Technology ("ORCAT")

Over the last several years, ORCAT, which is based at the Oregon Health & Science University, has launched a number of pilot initiatives in the Portland area to test the effectiveness of in-home monitoring technologies for seniors. According to Tracy Zitzelberger, the Center's Administrator, ORCAT is trying to gather sufficient data to show the efficacy of these services while also creating a service that allows seniors to age in place. ORCAT uses radio frequency sensors to monitor mobility and cognitive functions. ORCAT sees a relationship between these two functions and has offered a number of studies that support their argument that gathering real-time data allows caregivers and family members to track the mental decline of a senior.

One of ORCAT's current pilots has participants in over 300 homes across the Portland area. Each of the study's participants is over 80 and has agreed to be monitored by a net of wireless sensors deployed throughout their homes. Mobility data is gathered by the sensors and sent wirelessly to a laptop computer, where the data is time-stamped and uploaded daily to the project center. They are required to provide email feedback via a broadband connection provided by ORCAT. Data is supplemented by regular email communications from the participants regarding their experience. The preliminary conclusion by researchers was that "it appears that the perceived benefit of ultimately understanding how such systems might extend or enable their independent living outweighed any concerns about disruptions to their daily activities." (Jeffrey Kaye et al., *Deploying Wide-Scale In-Home Assessment Technology*, available at www.orcatech.org/papers/FICCDAT_07_Kaye.pdf).

Zitzelberger observes that while broadband has been beneficial to ORCAT's research efforts, "It is too slow and too asymmetric." She feels that fiber-optic connections would be better for the delivery of real-time data. In the near-term, the program will continue with its pilot programs to see whether in-home systems are effective in tracking cognitive health and preventing dementia. It is hoped that in-home monitoring systems will shift the traditional paradigm associated with Alzheimer's and other dementias away from treatment and towards early detection and prevention.

3.3.2.2 *Additional Remote Care Technologies.*

A wide range of additional remote care technologies enable seniors to live more independent lives and to age in place. Examples of these technologies include a vibration-based fall detector[149] and wander management systems.[150] These and other "person-centric" technologies promote independence among seniors and a culture of personal responsibility by untethering seniors from caregivers and institutional care.[151] *As AARP recently found, the vast majority of seniors – 87 percent – prefer to have help provided to them in their home while a similar percentage of older adults said they are willing to sacrifice some of their privacy in order to remain at home during their later years*.[152] While many of these services currently do not use broadband, leveraging the ubiquity of high-speed networks will enhance the ability of these services to gather and transmit more data more quickly.

3.4 Conclusions

Broadband enables a universe of technologies, services, and applications that provide seniors with real social, economic, and health gains. In particular:

- Broadband connects seniors to family, friends, and community by providing them with an interactive lifeline to the growing universe of information and services available online.
- Connecting seniors promotes a more independent lifestyle. Older adults who are more consistently engaged are less depressed and more active.
- Broadband provides seniors with a medium through which they can realize significant economic gains via comparison shopping, lower drug costs, managing personal finances, telecommuting, and small business creation.
- Broadband is also spurring innovations within the senior healthcare industry, which promises to transform the traditional elder care paradigm and refocus efforts on senior well-being.
- The use of broadband and broadband-enabled tools by seniors and in the care of seniors has the potential to reduce healthcare costs by billions of dollars each year, to encourage the creation of small businesses and nonprofits focused on educating and training seniors to use broadband, and to foster an innovative marketplace for senior-oriented content and services.

Acknowledging and promoting these successes is essential to attracting more seniors to broadband. It has been found that "the usefulness perception of [information

technologies by] senior citizens can be driven by both tangible benefits such as resource savings and intangible benefits such as self-actualization."[153] In other words, the more that seniors are aware of the many benefits of broadband and experience the tangible benefits associated with it, the more they will demand and adopt it. *Thus, the coordinated efforts of local, state, and national organizations and broadband campaigns should focus on touting the practical uses and impacts of broadband for seniors.*

4. THE IMPACT OF GREATER BROADBAND AVAILABILITY & TECHNOLOGICAL ADVANCES ON SENIORS

Greater broadband availability and continued technological advanced will result in a number of positive impacts on seniors in the coming years.

4.1 Innovation at the Network Level

First, innovations at the network level will enable a number of near-term innovations by providing more robust infrastructure, faster speeds, and more reliability. Over the next several years, network owners are poised to continue investing in their networks in order to provide all users, including seniors, with better broadband connections. Telephone and cable companies, for example, will continue to deploy fiber-optic systems, which have the potential to transmit data at speeds above 100 megabits per second. Similarly, wireless carriers will leverage their advanced spectrum licenses and more effective spectrum management techniques to build out third- and fourth-generation networks.

In addition to faster speeds, network managers will deploy more sophisticated protocols and methods for ensuring the reliable and secure transmission of high-priority data from services like real-time health monitoring systems to doctors, caregivers, family members, and, when necessary, emergency medical personnel. Moreover, such techniques will be used to optimize the user experience for all subscribers by providing managers with latitude to decongest network traffic that could degrade the transmission of life-enhancing and lifesaving senior-oriented services.

The wider deployment of next-generation networks and optimal management techniques will further enable innovation by application and content developers. As more seniors adopt and use broadband, a wider array of senior-specific services will likely be developed for use in daily life. Moreover, competition among broadband providers will further push down prices, making the technology more affordable for all consumers, particularly seniors. In sum, the continued deployment of robust next-generation networks will spur continued experimentation, innovation, and adoption of helpful senior-oriented services and applications.

Especially in view of the nation's current financial crisis and credit crunch, policies at every level of government should strive to promote as much investment in broadband infrastructure as possible. The build-out, maintenance, and management of advanced networks, along with the development of broadband-enabled services and applications, cost billions of dollars. Policy actions which promote investment and innovation are in the best interests of seniors. To this end, government measures like the recent adoption of a law to enhance broadband data collection by the FCC will accelerate the deployment and adoption of this critical technology.[154]

4.2 Near-Term Outlook

Second, greater broadband adoption and use will have a number of near-term benefits. With the wider deployment of local demand stimulation programs and training courses, it is expected that more seniors will adopt broadband, and that additional older seniors will as well, thus narrowing the "gray" gap.

As more seniors adopt broadband, and as more robust networks are deployed across the country, the number and type of broadband-enabled services and applications that empower seniors will continue to proliferate. Providing seniors with more tailored products will allow a larger percentage of this segment to experience the tangible benefits of broadband, which in turn will spur adoption among even more seniors via a version of viral marketing among older adults. In addition, the proliferation of senior-specific broadband-enabled healthcare tools like in-home monitoring systems, along with the promotion of a new approach to elder care, will increase the demand for these types of services. As a result, having a larger number of senior using these technologies will provide more data on the efficacy of telemedicine services and should work to create a robust market for such services. Collecting additional data for these services in the near-term will prove crucial to their long-term viability.

The successes of today's pilot and other projects will inform the innovations of tomorrow. Data collected now will help determine whether current innovations are sustainable and of value to seniors. In addition, the next few years will be crucial to the future success of technological innovations in the field of senior telemedicine. Wider deployments and system refinements will help to assuage any fears held by seniors and to allay doubts of skeptical practitioners.[155] Thus, the near-term successes of unique efforts aimed at bringing broadband to seniors, like OATS, and organizations that use broadband to provide cutting-edge telemedicine and in-home, broadband-based monitoring services, like Elite Care (see Case Study 3), will be critical to the deployment of similar models across the country.

CASE STUDY 3
Elite Care

Elite Care (www.elitecare.com) operates two senior facilities in Oregon and employs a variety of innovative monitoring technologies. Through its "Creating an Autonomy-Risk Equilibrium" program, Elite Care deploys comprehensive "smart home" technology systems. Elite Care provides residents with the option of carrying a badge that contains a wireless sensor. This sensor interacts with other sensors in the home and around the premises to provide biofeedback to a centralized database. This system serves three primary audiences: residents who want biofeedback and cues to prolong their independence; staff members who want constant health information in order to identify health problems early and objective quality control measurements; and family members who wish to check up on their loved ones via Elite Care's Family Portal. Broadband connections enable real-time monitoring by family and caregivers. Lydia Lundberg, one of Elite Care's founders, says that the Family Portal "keeps families happy" by allowing them to monitor the health and status of a loved one (but only if the resident gives permission). Equally as important, staff also monitors the biofeedback.

Launched in 2000, Elite Care's two communities house almost 100 seniors. Lundberg feels as though her program is a trendsetter in the world of facilities-based senior care. She is particularly proud of the fact that much of the technological innovation that has resulted over the past few years is driven by residents providing constant feedback. While her program is open only to paying customers, Lundberg is confident that similar types of technologies will be common in the homes of many seniors once the costs of such services come down.

Also in the near-term, telemedicine and other senior service providers will continue to outreach to additional potential patients. For example, Lisa Gaudet, Director of Remote Care Technology for Northeast Health,[156] observes that in areas where broadband is not yet available, senior-specific telemedicine providers are using analog technologies (e.g., dial-up modems) to get into seniors' homes. However, Gaudet foresees a number of innovations centered on cellphones because of their relative ubiquity and the large number of applications available on them. Moreover, the increasing sophistication of cellphones, particularly 3G-enabled Smartphones, allows users to access the Internet at broadband-level speeds. The deployment of more robust wireless broadband networks will be a boon to rural providers like Northeast Health and others across the country and will provide yet another means of getting more seniors to use broadband-enabled services.

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With the coming wave of retiring baby boomers on the horizon, policies and practices forged now will set an important precedent for addressing the demands and needs of a savvier generation of older adults.

4.3 Long-Term Outlook

Assuming that near-term demand stimulation and adoption efforts succeed at bringing a majority of seniors online, the long-term outlook is bright for older adults who use broadband. Niche uses currently evident among some seniors – e.g., actively managing finances online, using broadband for health purposes like brain exercises, comparison shopping for prescription drugs, etc. – will become the norm for many older adults. In-home monitoring technologies and other senior telemedicine services will become more widespread, promoting a more independent lifestyle among seniors. *Each of these trends presage a significant positive shift in perceptions associated with senior living, healthcare, and wellbeing*.

Driven by retiring baby boomers and younger seniors, the older population in the coming decades will be more independent, more willing and able to work from home, and savvier in how to incorporate broadband into their lives. Equally as important, this new senior lifestyle will have consequences far beyond just this older demographic. Economic welfare gains associated with medical savings, a potential decrease in reliance on public funding, a more interactive healthcare system, and other efficiencies stemming from broadband, for example, will likely be distributed across all demographics.

Cutting-edge research and experimentation currently underway predict positive lifestyle changes for seniors. For example, *broadband networks will increasingly be used as a medium through which critical information is sent in support of appliances and products designed to assist seniors*. These types of "smart" products will collect critical data in real-time and use broadband connections to analyze and transit the data the proper entity. For example, a researcher has developed a "smart" shoe that gathers data related to person's balance and, in theory, could alert the wearer, caregiver, or monitoring agency of an imminent fall.[157]

Combined with in-home monitoring technologies, seniors can benefits from a "smart" home that acts as a real-time, always-on receptacle for critical health information that can in turn be used to provide more real-time diagnoses to seniors via broadband.[158] Intel, among others, is experimenting with a Digital Home that would provide a "continuum of care" for seniors. The Home would leverage advanced broadband capabilities to provide remote services and to allow family members to stay abreast of their aging loved ones.[159] Remote consultations with physicians from one's home will likely become standard[160] as health records and other diagnostic technologies become portable over a broadband connection.[161] Much further down the line, "smart" robots

hold promise for providing seniors with a physical presence to deliver critical assistance in emergencies.[162]

Broadband will thus continue to be an invaluable tool for seniors in the long-term, both as a service they use to participate in a wide range of activities and as a compliment to "smart" products that will provide them with non-invasive real-time monitoring of their health and movements. In addition, broadband will continue to be used to enhance economic well-being, which will trickle down to the wider economy, and to bolster social interactions and community connectedness. Each of these uses will transform the traditional assumptions associated with aging as seniors live more independent lives with the help of broadband.

4.4 Conclusions

Near-term gains are critical to enabling long-term successes. Going forward, a multifaceted focus is necessary. First, connecting more seniors to broadband will help narrow the "gray" gap and provide seniors with access to a growing universe of life-enhancing and lifesaving applications and services.

Second, targeted education efforts regarding the real benefits of broadband will spur adoption and use in the short term. In addition to the previously discussed cost-savings enabled by broadband, educating seniors on the many ways that broadband can be used for personal social and healthcare gains is essential to stimulating demand and use by older adults.

Third, over the next few years it will be necessary to continue providing an environment that promises easy access to innovative broadband-enabled tools and services. The promotion of broadband as a key tool for enabling better health care and enhanced aging by public and private sector stakeholders will also spur adoption among seniors and encourage continued innovation.

5. GOVERNMENT, SENIORS & BROADBAND: BEST PRACTICES FOR MEANINGFUL POLICYMAKING

Broadband is having and will continue to have profound positive impacts on senior citizens, the economy, and the healthcare system. A variety of stakeholders in the public and private sectors will play a key role in facilitating the continued deployment of advanced networks and spurring innovation. Meaningful policies and approaches for empowering seniors via broadband will occur in many arenas.

Best practices for meaningful policy making include:

1. Comprehensive education and outreach efforts by individual actors and by public-private collaborations are critical components to raising senior awareness of the many benefits associated with broadband.
2. Foster a culture of applied technology and innovation across the country and at every level of government in order to educate seniors on the real world benefits of broadband.
3. Supporting local organizations that specialize in bringing seniors to broadband is essential to increasing adoption and use.
4. A spectrum of options exists, in lieu of outright subsidies, to make broadband more affordable and available to seniors while leaving ample room for competition to organically drive down the price of broadband for all consumers.
5. Core policy tools, combined with effective public-private partnerships, should be used to encourage broadband deployment to unserved areas of the country.
6. The lack of access to a computer by seniors should be addressed in ways similar to those that seek to stimulate demand for and adoption of broadband.
7. Continue adhering to the nation's pro-competition regulatory framework for broadband in order to encourage continued investment and innovation in broadband networks and technologies.

5.1 BEST PRACTICE #1

Comprehensive education and outreach efforts by individual actors and by public-private collaborations are critical components to raising senior awareness of the many benefits associated with broadband.

Even though broadband adoption and use are on the rise among senior citizens, a number of older adults remain unaware or are skeptical of the practical benefits associated with it. Indeed, the current "gray" gap is illustrative of the generational split among seniors: older seniors are generally wary of going online while younger seniors and baby boomers are more avid users. However, as previously discussed, *seniors of all ages are more likely to use broadband once they learn of its benefits and receive training on how to use it.*

To date, local and national organizations and initiatives have been successful in the education of and outreach to seniors regarding the many benefits of broadband. The successes of national actors like AARP and APT, along with more local efforts like OATS and public-private collaborations like Connect Kentucky, demonstrate how effective targeted education can be in spurring demand and use of broadband and broadband-enabled services. Thus, similar efforts should be encouraged and supported in order to promote education on:

- Prescription drug benefits and cost savings
- Information regarding state and federal insurance and medical benefits
- Cost-savings associated with e-commerce
- Applications and tools to sharpen mental acumen
- Staying connected with family and friends
- Healthcare information and tools (e.g., real-time health monitoring) designed to prolong independent living
- Websites, blogs, and other content tailored specifically for seniors

5.2 BEST PRACTICE #2

Foster a culture of applied technology and innovation across the country and at every level of government in order to educate seniors on the real world benefits of broadband.

The United States has been a world leader in the transition towards a more digital, interconnected global marketplace. The Internet was developed in the U.S. in the 1970s and 1980s; [163] the U.S. was one of the first countries to see the value in incorporating information technology into government and business in order to cut costs and make processes more efficient;[164] and the U.S. has arguably the most robust broadband infrastructure in the world, both wired and wireless.[165] Yet in spite of these successes, the United States has yet to fully embrace the life-altering implications of broadband. *More often than not, broadband discussions become bogged down in policy debates over esoteric issues when the focus should be on promoting a broadband-enabled digital culture*. There are a number of ways that government – local, state, and federal – businesses, nonprofits, and other stakeholders can work together to educate and empower seniors via broadband.

First, government should reassess the ways it uses technology vis-à-vis senior citizens to ensure that its services are inviting and inclusive of the senior point of view. In addition to posting information online, many government websites, especially those that provide senior services, could be redesigned to be more senior-friendly and interactive. The range of

senior-friendly design elements range widely, from making sure that text fonts are large enough to ensuring that information flows properly and guides seniors to the right place.[166] Also, in the appropriate instances, "open" applications could be implemented to provide seniors, caregivers, and others who are involved in elder care an outlet for suggesting best practices, correcting misleading information, and voicing opinions on issues. There is a large body of literature on the many virtues of a more robust e-government culture.[167] Given the high rates of senior voting relative to other age groups,[168] and a collective dedication to community, e-government may be a key lure for spurring more seniors to adopt broadband at home.

Second, an extension of making information more useful to senior users is creating a set of useful tools online for older adults to use – and educating seniors on these tools via outreach efforts. This would include partnering with organizations to leverage expertise and create synergies for seniors. For example, the Medicare administration could supplement its website with links to sites like BenefitsCheckup.org, a senior-friendly site that helps older adults identify benefits they qualify for and provides information on a wide range of government and private services.[169] On a more local level, New York City has developed a portal – Access NY – that "identifies and screens over thirty City, State, and Federal human service benefit programs" for seniors and other residents.[170] Other states provide similar services. Promoting these types of services could draw more seniors online provided that the value of using them is effectively communicated.

Third, policy makers could partner with local organizations to raise awareness of technology in general and broadband specifically. For example, in New York City, City Councilmember Gail Brewer worked with OATS to put on a "touch tank" for senior citizens. This event brought seniors together to experience new technologies, answer any questions, and allay any fears or intimidation they might have.[171] Similarly, national politicians could tout the positive impacts of broadband on seniors by commissioning studies or holding hearings. U.S. Senator Herb Kohl, for example, has convened numerous hearings of the Senate's Special Committee on Aging and has called for the preparation of various reports on a wide array of senior issues.[172]

Fourth, federal entities and elected officials could partner with national organizations like the Alliance for Public Technology ("APT") and leverage these groups' experience in drawing attention to broadband. Over the last several years, APT has sponsored a "Broadband Changed my Life!" campaign that aggregates success stories that describe how people have benefited from using broadband.[173] Similarly, senior-oriented advocacy groups like AARP and Senior Net could be viable partners in such ventures. A combination of local and national awareness campaigns would have a significant impact on seniors, many of whom remain offline altogether.[174]

Creating a national culture that more aggressively embraces technology and broadband would provide seniors with more awareness of the life-altering impacts of high-speed

Internet access and could potentially spur a large number to adopt it at home. Local efforts that specialize in the training of seniors to use computers and broadband are an essential part of this more national strategy.

5.3 BEST PRACTICE #3

Supporting local organizations that specialize in bringing seniors to broadband is essential to increasing adoption and use.

As previously discussed, many seniors are unaware of broadband, and, for those who are aware, there is a gap between awareness and adoption. Local efforts have been highly successful at bridging this divide by providing seniors with targeted training in basic computer and Internet skills. Local, state, and federal government can provide critical support to these organizations in a number of ways.

First, the lifeline for many of these local organizations is public funding. While some local nonprofits like OATS in New York are able to attract private support, many programs, like Computers4Seniors in Georgia, rely entirely on public funding. Thus, dedicating a reliable stream of funding and creating competitive grant programs to support these efforts would allow current service providers to focus on providing training to seniors and encourage additional organizations to be developed and launched.

Second, local governments should work with training programs and other senior-related projects to concentrate their efforts on geographic areas or segments of the population that are most in need. Many computer and Internet classes are provided only in modern facilities that are wired for broadband, thus limiting the reach of these efforts. By partnering with local government, training programs and other service providers could expand their offerings to areas outside their traditional purview. California, for example, has recognized the potential synergies available by coordinating statewide broadband education efforts and is actively pursuing a comprehensive approach to spurring broadband demand, adoption, and use.[175]

The economic and political support of local service providers by state and local government is essential to helping older adults overcome fears and skepticism associated with broadband. Although smaller in scale than national organizations, local groups like OATS have been successful because of their size, not in spite of it. Small classes allow for more interaction among students and promote a more congenial atmosphere. Moreover, intergenerational programs, used by organizations like Per Scholas and Mount Hope, add another personal touch to training efforts that larger entities cannot provide. Thus, local training programs, with the support of local and

state government, have the potential to further close the gap between those seniors who have embraced broadband and those who remain wary of it.

5.4 BEST PRACTICE #4

A spectrum of options exists, in lieu of outright subsidies, to make broadband more affordable and available to seniors while leaving ample room for competition to organically drive down the price of broadband for all consumers.

Cost continues to be a major obstacle for many seniors who might otherwise subscribe to broadband. As discussed above, many seniors live on a fixed income and oftentimes cannot justify spending additional money on a broadband connection. A number of options are available to policy makers to make broadband more affordable to seniors while also deferring to the organic market forces that continue to drive down the price of the service. Outright subsidies, however, might not be the most economically rational approach. It has been argued that subsidies would ultimately be socially sub-optimal because they would create inefficiencies that offset any benefits that might accrue.[176] In lieu of subsidies, policy makers have a number of options available to them.

First, insurance laws could be modified to reflect the realities of aging and technology in the twenty-first century. Clauses in the Medicare laws, for example, could potentially create unnecessary obstacles for seniors who wish to use broadband to enhance their lives. Medicare healthcare benefits, for instance, are suspended if a senior returns to work, even if it is only on a part-time basis. As mentioned above, telecommuting options and other broadband-enabled applications allow seniors and baby boomers to continue working past the age of retirement and earn additional income that could be used to support their broadband subscription. Last year, Senator Herb Kohl introduced two bills that would allow older workers to continue in their jobs or return to work, and offered employers incentives for retaining or hiring seniors.[177] These and similar reform efforts could be implemented to incorporate broadband into the Medicare and healthcare schemes for seniors and potentially allow for reimbursement.

Second, state and federal government should consider extending tax credits to the purchase of broadband by seniors in order to defer some of the cost. These types of credits have been offered to service providers to spur the deployment of broadband in states around the country.[178] Extending similar credits to individual seniors could be a viable approach to stimulating demand and adoption of broadband among seniors who would not be able to afford it otherwise.

Third, regardless of the approach adopted by state and federal government to assist seniors in affording broadband, these efforts should not impede the organic market forces that are driving down prices. The price of broadband access has steadily fallen over the years. Moreover, competition among different broadband providers for an increasingly shrinking pool of consumers has led to the development of a variety of pricing plans for users. For example, some companies are experimenting with different price tiers, which base monthly bills on how much bandwidth a person uses.[179] In the future, some companies may tailor special packages for seniors and other segments of the population in order to cater to their unique needs and uses. Thus, the market should be provided with wide latitude to compete and provide innovative service packages to seniors.

5.5 BEST PRACTICE #5

Core policy tools, combined with effective public-private partnerships, should be used to encourage broadband deployment to unserved areas of the country.

Investment and innovation in the broadband market have successfully spurred network deployment to nearly every part of the country and, *where there are pockets of unserved consumers, viable local and state solutions, supported by federal funding, currently exist to bring broadband to these areas*. In order to further these successes, three primary approaches should be considered: first, continued use of public-private partnerships at the state level; second, meaningful reform of the federal Universal Service Fund ("USF"); and third, the provision of additional funding and the creation of additional incentives for the deployment of advanced broadband infrastructure across the entire country. Each of these approaches effectively targets unserved areas and ensures the development of appropriate build-out strategies to spur the deployment of broadband to them.

First, public-private partnerships have thus far been successful in bringing broadband to unserved areas and stimulating demand among non-broadband users like seniors who live in these largely rural parts of the country. The Connected Nation model, which was first used in Kentucky, has since been adopted in Tennessee, Ohio, and West Virginia.[180] Its e-community strategies, which build on the best practices of the Connect Kentucky model, offer communities a way to "effectively and efficiently leverage technology" by promoting the value of broadband and broadband-enabled services.[181] This approach has successfully bridged the broadband and technology divide between urban and rural areas, and higher-income and lower-income users, and should be considered a model for other states around the country. Connected Nation estimates that adoption of its model by states across the country would result in a nationwide economic stimulus of over $134 billion per year.[182]

Second, careful and rational reform of the federal USF reform could be designed to target unserved areas and provide support to spur the adoption of broadband and other advanced communications services. The USF was originally created to subsidize the build out of basic telephone infrastructure to rural parts of the country. However, with telephone penetration near 100 percent, and with the number of traditional telephone lines decreasing every year since 2002,[183] reforms should center on containing the size of the fund, targeting truly unserved areas of the country, and designing economic incentives for providers to build out their networks to reach those who do not yet have access to broadband. Using this type of mechanism will ensure that funding is used as an incentive for innovation and not as a subsidy to support an unsustainable and ineffective business model.

Third, additional funding from the government, either via an economic stimulus package[184] or another source, could supplement USF funding and other grants to support local broadband education efforts and to create additional incentives for the deployment of broadband to unserved areas. The recent economic downturn and credit crunch has highlighted the need for public and private sector collaboration to create economic development opportunities in communities across the country. A number of organizations have called on the government to allot a portion of economic stimulus funding to the continued deployment of broadband infrastructure.[185] Funding of this sort should focus on spurring broadband build-out to unserved parts of the country and could also be used to support new and existing programs that bring seniors and other users to broadband (e.g., those described above in Best Practices 1-4). Vehicles for allotting such funding could include tax breaks for broadband providers, support grants for local nonprofits, and loans or other subsidies for the purchase of a computer.

Policy makers should consider these and other types of policy tools when implementing an approach to further spur broadband build-out, demand, and use. Government should act to address clear instances of market failure and work to make broadband available to seniors and all other residents living in remote parts of the country.

5.6 BEST PRACTICE #6

The lack of access to a computer by seniors should be addressed in ways similar to those that seek to stimulate demand for and adoption of broadband.

The primary reason among all age groups for not having broadband is the lack of a computer, not lack of available broadband. In addition, seniors are less likely than other age groups to own a computer. Owning or having access to a computer is a prerequisite to using wire-based broadband. However, in lieu of direct government involvement in providing

seniors with a computer, a number of innovative approaches are currently being employed across the country to make computers available to seniors.

Computer recycling programs like Per Scholas have been effective in refurbishing old computers and making them available to seniors and low-income consumers at discounted prices. In addition, Per Scholas has teamed with OATS in New York City to provide seniors with a free computer, installation, and a lifetime warranty upon completion of a training class (see Case Study 1 above). Similarly, One Economy (www.one-economy.com) has developed a viable model for bringing lower-income users to broadband and training them to use it for personal and economic gain. It has developed programs like its Digital Inclusion initiative and trained volunteers via its Digital Connectors program to connect the unconnected.[186]

These and similar types of grassroots initiatives have been very successful in spurring awareness, demand, and use of broadband among seniors and lower-income users. As mentioned above, government could expand its support of these types of programs in order to spur the use of broadband by older adults and other unconnected consumers.

5.7 BEST PRACTICE #7

Continue adhering to the nation's pro-competition regulatory framework for broadband in order to encourage continued investment and innovation in broadband networks and technologies.

A regulatory approach based on pro-investment policies has resulted in a tremendous amount of innovation that is inuring to the benefit of seniors. Congress, the FCC, and an array of other policy makers have, thus far, crafted broadband policies that are spurring the deployment of next-generation networks throughout the country – networks that will be able to support the data-rich senior-oriented services and applications that are on the horizon. All categories of providers (the traditional telcos, cable companies, wireless companies, and others) have responded to this regulatory environment with substantial investments. This, in turn, has spurred tremendous innovation of broadband-enabled applications, content and services, including specifically for seniors.

SNAPSHOT 5
Why Certainty & Reliability Are Important to Broadband Providers & Users

1. The current regulatory regime has spurred the development of senior-focused applications and services.
2. Seniors are more likely than other users to use emergency and life-saving applications. These services depend on a reliable broadband connection to be effective.
3. Network reliability depends upon a network owner having ample latitude to manage an increasing amount of data flowing over its infrastructure. Constraining this could decrease the reliability and efficiency of network.
4. In light of the recent economic downturn, it is important to craft policies that provide regulatory certainty and incentives to spur further investment and innovation.

Continuing this approach is in the best interest of seniors and of the nation as a whole. As the Federal Trade Commission ("FTC"), the nation's preeminent monitor of competition in a variety of markets, recently observed: "industry-wide regulatory schemes – particularly those imposing general, one-size-fits-all restraints on business conduct – may well have adverse effects on consumer welfare, despite the good intentions of their proponents. This is particularly true in terms of product and service innovation."[187] As a result, the FTC recommended a cautious approach to policy making in the broadband arena, one that proceeds carefully and balances the interests of all stakeholders in the market before acting.[188] (See Snapshot 5 for a discussion of the benefits of certainty and reliability in the broadband market.)

6. CONCLUSION

Broadband is empowering and enhancing the lives of all consumers, including the nation's senior citizens. Policies forged now will dictate whether these many positive gains are allowed to accrue of their own momentum.

Going forward, policymakers at all levels of government will inevitably have opportunities to pursue policies that could benefit the broadband market. Throughout the entire history of the advanced communications market, policies forged at the federal level have directly affected consumers. For example, after a deregulatory framework for wireless was adopted and implemented in the early 1990s, prices immediately decreased as piecemeal state-by-state regulation was replaced by a harmonized national approach. In the case of broadband, a hands-off approach has led to the development of a robust market and enormous leaps in innovation, all of which has profoundly changed the way seniors and other users live their lives. (Please see the introductory paper in this series for further discussion.)

Over the next few years, government and industry will have many similar opportunities to help ensure the continued development, deployment, and adoption of advanced broadband technologies. Collaboration among the public and private sector will spur demand for and use of broadband among seniors. Because broadband is the foundation upon which many future approaches to aging and senior care may be based, it is essential for policy makers to champion policies that create opportunities for continued investment, innovation, and technological advancement. Accordingly, policy makers should focus their efforts on ensuring that all seniors understand the importance of and have access to the growing universe of broadband-enabled services, applications, and technologies. Broadband is changing the aging paradigm and policy makers should not stand in the way.

ENDNOTES

[1] *See In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Fifth Report, GN Docket No. 07-45, para. 76 (rel. June 12, 2008) (finding that broadband deployment has been "reasonable and timely") ("*5th 706 Report*").

[2] *See High-Speed Services for Internet Access: Status as of June 30, 2007,* FCC Wireless Competition Bureau Report, Table 10 ("*FCC Broadband Stats to June 2007*").

[3] *See* John Horrigan, *Commentary: U.S. Lags Behind*, at p. 1, Pew Internet & American Life Project (August 2007), *available at* http://www.pewinternet.org/pdfs/Broadband_Commentary.pdf.

[4] *See* John Horrigan, *Home Broadband Adoption 2008*, Pew Internet & American Life Project, at p. 2 (July 2008), *available at* http://www.pewinternet.org/pdfs/PIP_Broadband_2008.pdf ("*Home Broadband Adoption 2008*").

[5] *Id.* at p. 10.

[6] *Id.* at p. 12.

[7] *See Broadband in America: Access, Use and Outlooks*, Consumer Electronics Association, at 6, July 2007, *available at* http://www.ce.org/PDF/CEA_Broadband_America.pdf.

[8] *See* William G. Korver, *Broadband Adoption and Not Availability is Key Challenge, Says One Economy*, July 31, 2008, BROADBANDCENSUS.COM, *available at* http://broadbandcensus.com/blog/?p=225; *Home Broadband Adoption 2008* at p. 12-14 (noting that "one-third (33%) of non-internet users say they are simply not interested in the internet" whereas "just 7% say it is too expensive.").

[9] U.S. Department of Health and Human Services, Administration on Aging, *A Statistical Profile o f Older Americans 65+* (June 2008), *available at* http://www.aoa.gov/press/prodsmats/fact/pdf/ss_stat_profile.pdf ("*Statistical Profile*").

[10] *Id.*

[11] Jeffrey S. Passel and D'Vera Cohn, *U.S. Population Projections: 2005-2050*, at p. 20, Pew Research Center (rel. Feb. 11, 2008), *available at* http://pewhispanic.org/files/reports/85.pdf.

[12] *See, e.g., Growing Older in America: The Health and Retirement Study,* at 4, Report of the National Institute on Aging, National Institutes of Health, U.S. Department of Health and Human Services (March 2007), *available at* http://www.nia.nih.gov/NR/rdonlyres/D164FE6C-C6E0-4E78-B27F-7E8D8C0FFEE5/0/HRS_Text_WEB.pdf ("*Growing Older*").

[13] *See* Press Release, *Oldest Baby Boomers Turn 60*, U.S. Census Bureau (rel. Jan. 3, 2006), *available at* http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_editions/006105.html.

[14] *See* John Gist, *Comparing Boomers' and their Elders' Wealth at Midlife*, at 2, AARP Policy Institute (Sept. 2005), *available at* http://assets.aarp.org/rgcenter/econ/dd123_wealth.pdf.

[15] *See First Baby Boomer Receives First Social Security Payment*, Feb. 15, 2008, USA TODAY, *available at* http://www.usatoday.com/money/perfi/retirement/2008-02-12-boomer-social-security_N.htm.

[16] *See, e.g.,* Kara Rowland, *Retirement Plans Face Tough Times*, WASH. TIMES, Nov. 10, 2008, *available at* http://washingtontimes.com/news/2008/nov/10/dreams-deferred/ (chronicling the impact of the recent economic downturn on retirees).

[17] *See* Jennifer Levitz, *Americans Delay Retirement as Housing, Stocks Swoon*, WALL ST. JOURNAL, April 1, 2008 (describing the impact of lower house prices and other economic woes on older workers and those planning for retirement).

[18] *Id.*

[19] For example, a recent UCLA study found that "for computer-savvy middle-aged and older adults, searching the Internet triggers key centers in the brain that control decision-making and complex reasoning. The findings demonstrate that Web search activity may help stimulate and possibly improve brain function." *See* Rachel Champeua, *UCLA Study Finds that Searching the Internet Increases Brain Function,* UCLA Newsroom, Oct. 14, 2008, *available at* http://newsroom.ucla.edu/portal/ucla/ucla-study-finds-that-searching-64348.aspx.

[20] *See* Rob Salkowitz, Generation Blend, at p. 64 (Wiley 2008) (noting that "Extending the careers of productive workers beyond retirement age can offset some of the costs of training and recruitment, while keeping important knowledge and relationships in place.") ("*Generation Blend*").

[21] *706 5th Report* at para. 35.

[22] *See, e.g.*, Jonathan Adelstein, *Statement of FCC Commissioner Jonathan Adelstein, En Banc Hearing on Broadband and the Digital Future*, p. 2, July 21, 2008 ("Despite progress, the U.S. faces deficits of adoption, affordability, and capability when compared to the global broadband leaders. It is estimated that some 55 percent of adult Americans have broadband at home, but that still leaves almost half of all Americans without broadband access.").

[23] *5th 706 Report* at para. 36.

[24] *See* David P. McLure , *Deployment of Broadband to Rural America,* at p. 15, USIIA Report (rel. Mar. 4, 2008), *available at* http://www.usiia.org/pubs/Rural.pdf ("*Rural Broadband Deployment*").

[25] *See* NTCA, Home, http://www.ntca.org/.

[26] *See NTCA 2008 Broadband/Internet Availability Survey Report*, p. 3, NTCA, *available at* http://www.ntca.org/images/stories/Documents/Advocacy/SurveyReports/2008ntcabroadbandsurveyreport.pdf.

[27] *5th 706 Report* at para. 36.

[28] *See* USDA Economic Research Service, Briefing, *Rural Population and Migration: Trend 6 – Challenges From an Aging Population*, *available at* http://www.ers.usda.gov/Briefing/Population/Challenges.htm.

[29] *Id.*

[30] *Rural Broadband Deployment* at p. 5.

[31] *See, e.g., The Economic Impact of Stimulating Broadband Nationally*, at p. 16, A Report from Connected Nation (rel. Feb. 21, 2008), *available at* http://connectednation.com/_documents/Connected_Nation_EIS_Study_Full_Report_02212008.pdf ("*Connected Nation Report*").

[32] *Id.*

[33] *Id.*

[34] *See The State of Connectivity*: *Building Innovation Through Broadband*, at p. 65-66, Final Report of the California Broadband Taskforce (rel. Jan. 2008), *available at* http://www.calink.ca.gov/pdf/CBTF_FINAL_Report.pdf ("*California Broadband Task Force Report*").

[35] *5th 706 Report* at para. 58.

[36] *FCC Broadband Stats to June 2007* at Table 10 (providing data on the number of broadband subscribers in each state for the years 2001-2007).

[37] *Older Americans* at p. 3.

[38] *See Broadband in America: Access, Use and Outlooks*, at p. 6, Consumer Electronics Association (July 2007), *available at* http://www.ce.org/PDF/CEA_Broadband_America.pdf ("*CEA Report*").

[39] *Id.*

[40] *See* Pew Research Center for the People and the Press April 1996 Biennial Media Consumption Survey, *available at* http://people-press.org/reports/display.php3?ReportID=127.

[41] *See* Susannah Fox, *Wired Seniors*, at p. 4, Pew Internet & American Life Project (Sept. 2001), *available at* http://www.pewinternet.org/pdfs/PIP_Wired_Seniors_Report.pdf ("*Wired Seniors*").

[42] *See* Susannah Fox, *Older Americans and the Internet*, at p. 1, Pew Internet & American Life Project (Mar. 2005), *available at* http://www.pewinternet.org/pdfs/PIP_seniors_Online_2004.pdf ("*Older Americans*").

[43] *See* Susannah Fox, *Are Seniors Sitting Ducks?* at *p.*1, Pew Internet and American Life Project (April 2006), *available at* http://www.pewinternet.org/pdfs/PIP_Wired_Senior_2006_Memo.pdf.

[44] *Id.*

[45] *Home Broadband Adoption 2008* at p. 10-15.

[46] *See* Susannah Fox, *Digital Division*, at p. 6, Pew Internet & American Life Project (Oct. 2005), *available at* http://www.pewinternet.org/pdfs/PIP_Digital_Divisions_Oct_5_2005.pdf.

[47] *See* APT, Broadband Changed my Life!, http://www.apt.org/BB-changed-my-life/.

[48] *Statistical Profile.*

[49] *Id.*

[50] *Id.*

[51] *Home Broadband Adoption 2008* at p. 3.

[52] *Id.*

[53] *Id.* at p. 2.

[54] *Home Broadband Adoption 2008* at p. 12.

[55] *Statistical Profile.*

[56] *Id.*

[57] Carmen DeNavas-Walt, Bernadette D. Proctor, and Jessica C. Smith, *Current Population Reports*: *Income, Poverty, and Health Insurance Coverage in the United States: 2007*, at p. 15, U.S. Census Bureau (2008), *available at* http://www.census.gov/prod/2008pubs/p60-235.pdf.

[58] *See U.S. Consumer Eying 'High Speed' Broadband More Closely According to InStat Survey,* InStat, March 5, 2008, *available at* http://www.businesswire.com/portal/site/google/?ndmViewId=news_view&newsId=20080305005134&newsLang=en

[59] Up from $9.99 per month. *See* K.C. Jones, *AOL Increasing Dial-up Fees*, INFORMATION WEEK, July 1, 2008, *available at* http://www.informationweek.com/news/services/data/showArticle.jhtml?articleID=208801963.

[60] In New York City, the free provider is Metro Connect, http://www.metconnect.com/about.html. Additional free ISPs can be found at http://www.all-free-isp.com/.

[61] *5th 706 Report,* at para. 59.

[62] *Connected Nation Report* at pp. 8-9.

[63] *Wired Seniors* at p. 2.

[64] *Id.*

[65] *Older Americans* at p. ii.

[66] *See* Susannah Fox, *Panel: Can the Health Informatician Help Seniors Cross the Digital Divide?* at p. 3, Pew Internet and American Life Project (Nov. 2006), *available at* http://www.pewinternet.org/ppt/fox_amia_nov_2006.pdf.

[67] *Id.*

[68] *See Senior Citizens Most Concerned about Health; Get News from Doctor, Internet*, June 8, 2006, SENIOR JOURNAL, *available at* http://seniorjournal.com/NEWS/SeniorStats/6-08-23-SeniorCitizensMost.htm.

[69] *See, e.g., Older Americans Lead Gain in Internet Use for Election 2004,* Nov. 12, 2004, SENIOR JOURNAL, *available at* http://www.seniorjournal.com/NEWS/Politics/4-11-12SeniorsOnNet.htm.

[70] OATS, for example, dedicates part of its Basics class to teaching seniors how to search for travel information (e.g., driving directions, airfares, etc.) and make airline reservations.

[71] *See, e.g., Affluent Seniors May be the New Online Financial Whizzes*, Jan. 15, 2008, Reuters, *available at* http://www.reuters.com/article/pressRelease/idUS136301+15-Jan-2008+PRN20080115 (noting that a recent report by the Spectrum Group found that "affluent senior citizens above the age of 70 are devoting a far higher percentage of their online time (32%) to financial pursuits than those age 70 and younger (13%).").

[72] *See Senior Citizens who Master Computers Have Less Depression*, Aug. 18, 2005, SENIOR JOURNAL, *available at* http://seniorjournal.com/NEWS/Aging/5-08-18MasterComputers.htm.

[73] *See generally* T.E. Seeman, *Social Ties and Health: The Benefits of Social Integration*, 6 Annals of Epidemiology 442-451 (1996).

[74] *See* Amy Harmon, *Grandma's on the Computer Screen*, Nov. 26, 2008, N.Y. TIMES.

[75] *See* AARP, Computer and Technology, http://www.aarp.org/learntech/computers/.

[76] *See, e.g.,* Carla K. Johnson, *Senior Citizen Bloggers Defy Stereotypes*, Nov. 6, 2005, USA TODAY, *available at* http://www.usatoday.com/tech/news/2005-11-06-geezer-blog_x.htm.

[77] *See, e.g.,* Sharon O'Brien, *Senior Blogs: Mental Exercise and Connection to the World*, About.com Senior Living, *available at* http://seniorliving.about.com/od/entertainmentrecreation/a/seniorblogs.htm.

[78] For more information on this program, *please see* http://www.computers4seniors.org/.

[79] Indeed, it has been found that the benefits of these types of programs are usually reciprocal and have lasting impacts on teens and on the computer skills learned by seniors. *See* Jane Kolodinsky, Michele Cranwell & Ellen Rowe, *Bridging the Generation Gap Across the Digital Divide: Teens Teaching Internet Skills to Senior Citizens*, J. of Extension, Vol. 40 No. 3 (June 2002), *available at* http://www.joe.org/joe/2002june/rb2.html.

[80] *See* OATS, Success Stories, *Intergenerational Program Builds Confidence for Young and Old, available at* http://www.oatsny.org/intergenerational.htm.

[81] *Id.*

[82] For a fuller exploration of the transition towards a more globalized economy and its various impacts, *please see* Robert J. Shapiro, *The Idea-Based Economy and Globalization: The Real Foundations of American Prosperity in the 21st Century*, NDN Globalization Initiative, Jan. 23, 2008, *available at* http://www.ndn.org/advocacy/globalization/the-idea-based-economy.pdf.

[83] *See* Sharon E. Gillett et al., *Measuring the Economic Impact of Broadband Deployment*, at p. 3-11 , Final Report, Prepared for the U.S. Department of Commerce, Economic Development Administration (Feb. 2006), *available at* http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/mitcmubbimpactreport.pdf.

[84] *Connected Nation Report* at p. 5.

[85] *See, e.g.*, Jonathan L. Willis, *What Impact will E-Commerce have on the U.S. Economy?* at p. 58, Economic Review, Second Quarter 2004, Federal Reserve Bank of Kansas City, *available at* http://www.kc.frb.org/publicat/Econrev/PDF/2q04will.pdf.

[86] *See* Press Release, *Quarterly Retail E-Commerce Sale: 2nd Quarter 2008*, U.S. Census Bureau (rel. Aug. 15, 2008), *available at* http://www.census.gov/mrts/www/data/html/08Q2.html.

[87] *See* John Horrigan, *Online Shopping*, at p. 2, Pew Internet & American Life Project (Feb. 2008), *available at* http://www.pewinternet.org/pdfs/PIP_Online%20Shopping.pdf ("*Online Shopping*").

[88] *Online Shopping* at p. 8.

[89] *Id.* at p. 10.

[90] *Id.* at p. 12.

[91] *See Prescription Drugs: Smart Shopping Yields Big Savings*, CONSUMER CHECKBOOK.ORG (2004), *available at* http://www.checkbook.org/cgi-bin/free/drug.pdf.

[92] *See* https://www.walgreenshealth.com/whc/aarp/jsp/aarp_home.jsp.

[93] *See* Wikipedia: Medicare Part D, *available at* http://en.wikipedia.org/wiki/Medicare_Part_D.

[94] A 2005 GAO report found that inaccurate information was provided nearly 30 percent of the time by operators on the Helpline. In addition, the report found that operators were unable to provide any information 10 percent of the time. *See Medicare: Accuracy of Responses from the 1-800-MEDICARE Help Line Should Be Improved*, United States Government Accountability Office, Report to Congressional Committees (Dec. 2004), *available at* http://www.gao.gov/new.items/d05130.pdf.

[95] *See* OATS, *Medicare Peer Counseling Saves Bronx Seniors Thousands in Drug Costs, available at* http://www.oatsny.org/medicare.htm.

[96] *Id.*

[97] *See* Woelfel Research, *Consumer Payment Study*, at p. 2, AARP Knowledge Management (Feb. 2007), *available at* http://assets.aarp.org/rgcenter/consume/consumer_payment.pdf ("*Consumer Payment Study*").

[98] *Id.*

[99] *See* Press Release, "*The New Retirement Survey" from Merrill Lynch Reveals How Baby Boomers Will Transform Retirement*, Merrill Lynch, Feb. 22, 3005, *available at* http://www.ml.com/index.asp?id=7695_7696_8149_46028_46503_46635.

[100] *Id.*

[101] *See, e.g.,* Allan Chernoff, *Delaying Retirement*, CNN Money, May 13, 2008, *available at* http://money.cnn.com/2008/05/13/news/economy/delaying_retirement/index.htm?postversion=2008051315.

[102] *See* Daniel Hecker, *Occupational Employment Projections to 2014*, Monthly Labor Review, Bureau of Labor Statistics (Nov. 2005), *available at* http://www.bls.gov/opub/mlr/2005/11/art5full.pdf

[103] *Id.*

[104] *See* AARP Policy Book, Ch. 10, Utilities: Telecommunications, Energy and Other Services, at p. 10-40, *available at* http://assets.aarp.org/www.aarp.org_/articles/legpolicy/10_utili07.pdf ("*AARP Policy Book*").

[105] *See* Report of the Taskforce on the Aging of the American Workforce (Feb. 2008), at p. 9, *available at* http://www.doleta.gov/reports/FINAL_Taskforce_Report_2-11-08.pdf ("*Aging Taskforce*").

[106] *AARP Policy Book.*

[107] *See* Carol Wilson, *Telecommuting Interest Soars*, Aug. 28, 2008, TELEPHONY ONLINE, *available* at http://telephonyonline.com/access/news/telecommuting-increases-0828/.

[108] *See* Eve Tahmincioglu, *The Quiet Revolution: Telecommuting*, Oct. 5, 2007, MSBC, *available at* http://www.msnbc.msn.com/id/20281475/.

[109] *Id.*

[110] *Aging Taskforce* at p. 3.

[111] *Generation Blend* at p. 67 (noting that "Workers in their sixties and seventies not only have the potential to remain productive, thanks to increasing life spans and health improvements, but are also the custodians of irreplaceable knowledge, relationships, and cultural lore.").

[112] *See* Robert W. Crandall & Charles L. Jackson, *The $500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access*, at p. iv, Criterion Economics LLC (July 2001), *available at* http://www.criterioneconomics.com/docs/Crandall_Jackson_500_Billion_Opportunity_July_2001.pdf.

[113] *Connected Nation Report* at p. 5.

[114] Robert E. Litan, *Great Expectations: Potential Economic Benefits to the Nation From Accelerated Broadband Deployment to Older Americans and Americans with Disabilities*, New Millennium Research Council (Dec. 2005), available at http://www.newmillenniumresearch.org/archive/Litan_FINAL_120805.pdf ("*Great Expectations*") (please note that this estimate includes cost savings associated with using broadband in the care for people with disabilities. It should also be noted that a large percentage (about a quarter) of older adults have disabilities, so there is some overlap.).

[115] *See* Senior Net, eBay for Seniors, http://www.seniornet.org/ebay/.

[116] *See* Matt Richtel, *Sticky Old People (Redux)*, Sept. 26, 2007, NY TIMES BITS BLOG, *available at* http://bits.blogs.nytimes.com/tag/senior-citizens/.

[117] *Id.* (reporting that "With so many Web sites aimed at the young, there are a growing number of venture capitalists investing in oldsters online. In the last year, there have been in particular a number of investments into social networking sites that are targeting people who have more of a need for Metamucil than MySpace.").

[118] *See, e.g.,* Alex Johnson, *Economy Hitting Elderly Especially Hard*, July 28, 2008, MSNBC, *available at* http://www.msnbc.msn.com/id/25804814/.

[119] *See, e.g.,* Retirement News, *Health Care Costs, Economy Pushing Senior Citizens to Bankruptcy and Poverty in the U.S.*, Aug. 28, 2008, SENIOR NET, *available at* http://seniorjournal.com/NEWS/Retirement/2008/20080828-HealthCareCosts.htm.

[120] *See* Matt Sedensky, *Study: Bankruptcies Soar for Senior Citizens*, Aug. 31, 2008, USA TODAY, *available at* http://www.usatoday.com/money/economy/2008-08-31-bankrupt-seniors_N.htm (observing that "While the bankruptcy filing rate for those under 55 has fallen, it has soared for older Americans, according to a new analysis from the Consumer Bankruptcy Project, which examined a sampling of noncommercial bankruptcies filed between 1991 and 2007. The older the age group, the worse it got — people 65 and up became more than twice as likely to file during that period, and the filing rate for those 75 and older more than quadrupled.").

[121] *See* Eric Dishman, *Inventing Wellness Systems for Aging in Place,* at p. 35, COMPUTER MAGAZINE (May 2004) ("*Inventing Wellness*").

[122] *Id.*

[123] *Id.*

[124] *See* Susannah Fox, *Online Health Search 2006*, at p. 2, Pew Internet & American Life Project (Oct. 2006), *available at* http://www.pewinternet.org/pdfs/PIP_Online_Health_2006.pdf.

[125] *See* Victoria Rideout et al., *e-Health and the Elderly: How Seniors Use the Internet for Health Information*, at p. 1, Kaiser Family Foundation (Jan. 2005), *available at* http://www.kff.org/entmedia/upload/e-Health-and-the-Elderly-How-Seniors-Use-the-Internet-for-Health-Information-Key-Findings-From-a-National-Survey-of-Older-Americans-Survey-Report.pdf.

[126] *See* Susannah Fox, *The Engaged e-Patient Population,* at p. 1, Pew Internet & American Life Project (Aug. 2008), *available at* http://www.pewinternet.org/pdfs/PIP_Health_Aug08.pdf.

[127] comScore recently found that the online health information category is booming in popularity and use. *See* Press Release, *Online Health Information Category Grows At Rate Four Times Faster Than Total Internet,* Sept. 9, 2008, *available at* http://www.comscore.com/press/release.asp?press=2436.

[128] *See* News Release, *AARP Launches Four Online Health Tools to Empower Consumers To Make Informed Choices in Care*, Aug. 22, 2008, AARP, *available at*http://www.aarp.org/research/press-center/presscurrentnews/aarp_launches_four_online_health_tools_to_empower.html

[129] *See, e.g.,* Sharon Begley, *The Upside of Aging*, Feb. 16, 2007, WALL ST. J.

[130] For additional resources, *please see* Alzheimer's, Dementia and Mental Health, *Best Computer 'Brain Games' for Seniors to Delay Alzheimer's Disease,* June 21, 2007, SENIOR NET, *available at* http://seniorjournal.com/NEWS/Alzheimers/2007/7-06-21-BestComputer.htm.

[131] *See* Alex Cohen, *Video-Game Makers Discover a New, Older Market*, Dec. 7, 2006, NPR, *available at* http://www.npr.org/templates/story/story.php?storyId=6589941 (observing that "According to the Entertainment Software Association, 25 percent of all gamers are 50 years or older, and game makers are looking for ways to market to that age group.").

[132] The Wii, which provides users with an interactive gaming experience unlike any other gaming console, is increasingly popular among seniors and is being used as a way of getting older adults to participate in physical activities. *See, e.g.,* the Wii Olympics 2008, an event recently put on by NorthEast Health, http://www.nehealth.com/Retirement_Living/Wii_Olympics_2008/; *see also* Dave Wischnowsky, *Wii Bowling Knocks over Retirement Home*, Feb. 26, 2007, Chi. Trib., *available at* http://www.chicagotribune.com/news/local/chi-070216nintendo,0,2755896.story (reporting on a similar activity in Illinois).

[133] *See* Alzheimer's Research & Prevention Foundation, Exercise and Brain Aerobics, http://www.alzheimersprevention.org/pillar_3.htm (noting that "Mental exercise has been reported by neurologists to reduce your chance of developing Alzheimer's disease by 70 percent" and recommending that "Everyone should spend at least 20 minutes, 3 times a week, doing mental exercise.").

[134] *See* International Conference on Alzheimer's Disease, *Highlights of Research Findings*, at p. 1, Alzheimer's Association, *available at* http://www.alz.org/icad/downloads/2008_ICADhighlights.pdf.

[135] *See* Press Release, *Alzheimer's Disease to Quadruple Worldwide by 2050*, June 10, 2007, Johns Hopkins University Bloomberg School of Public Health, *available at* http://www.jhsph.edu/publichealthnews/press_releases/2007/brookmeyer_alzheimers_2050.html (announcing a study by Ron Brookmeyer et al. entitled *Forecasting the Global Burden of Alzheimer's Disease*).

[136] *See* Majd Alwan, Devon Wiley & Jeffrey Noble, *State of Technology in Aging Services,* at p. 1, Center for Aging Services Technology (Nov. 2007), *available at* http://www.agingtech.org/documents/bscf_state_technoloy_phase1.pdf.

[137] *See* Aging Services: The Facts, *General Facts*, American Association of Homes and Services for the Aging ("AAHSA"), *available at* http://www.aahsa.org/aging_services/default.asp ("*AAHSA General Facts*").

[138] *Great Expectations.*

[139] *See* Richard Adler, *Older Americans, Broadband, and the Future of the Internet*, at p. 2, Senior Net Report, *available at* http://www.seniornet.org/research/SeniorNetNNPaper060606.pdf.

[140] *Inventing Wellness* at p. 36.

[141] *See* Gregory T. Huang, *Monitoring Mom*, June 2003, TECHNOLOGY REVIEW, *available at* http://www.technologyreview.com/Infotech/13237/?a=f; *see also* Elizabeth Olson, *High-Tech Offers Elderly the Chance to "Age in Place,"* May 25, 2008, NY TIMES.

[142] *See Senior Citizens to See High Tech Sensors in Homes, on Bodies to Monitor Health*, Dec. 6, 2007, SENIOR JOURNAL, *available at* http://www.seniorjournal.com/NEWS/Features/2007/7-12-06-SenCit2See.htm.

[143] *Id.*

[144] *See* Linda L. Barrett, *Healthy @ Home*, at p. 22, AARP, *available at* http://assets.aarp.org/rgcenter/il/healthy_home.pdf ("*Healthy @ Home*").

[145] *AAHSA General Facts*

[146] *Id.*

[147] *Id.*

[148] *Id.*

[149] *See* Medical Automation Research Center, University of Virginia, Gait Monitoring Device, http://marc.med.virginia.edu/projects_gaitmonitoring.html.

[150] *See, e.g.,* Wireless TelehomeCare Solutions, http://www.homefreesys.com/technology.htm, Home Free.

[151] *See Connected Personal Health in 2015: "Getting it Right!"* Continua Health Alliance, *available at* http://www.continuaalliance.org/news_events/white_papers/CHA_WP081408v07.pdf.

[152] *Healthy @ Home* at p. 8.

[153] *See* C.W. Phang et al., *Senior citizens' acceptance of information systems: A study in the context of e-Government services,* at p. 18, IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT, *available at* http://www.comp.nus.edu.sg/~atreyi/papers/senior-egov.pdf.

[154] The President signed the Broadband Data Act into law in October 2008. This law "requires Internet service providers to give the FCC more detailed reports so the FCC can identify the actual numbers of broadband connections by customer type and geographic area." *See* Stephanie Condon, *President Signs Broadband Data Collection Bill*, Oct. 10, 2008, CNET NEWS.COM, *available at* http://news.cnet.com/8301-13578_3-10063734-38.html.

[155] *See, e.g.,* Atiya Mahmood et al., *Perceptions and Use of Gerotechnology: Implications for Aging in Place*, at p. 105-106, J. of Housing for the Elderly, Vol. 22 (noting that "some researchers caution that [monitoring] technologies may actually impair quality of life.").

[156] *Please see* www.nehealth.com for more information.

[157] *See 'Smart Shoe' Could Prevent Elderly Falls*, July 31, 2008, AP, *available at* http://www.cnn.com/2008/TECH/ptech/07/31/smart.shoe.ap/index.html.

[158] *Inventing Wellness* at p. 36.

[159] *See* Health Research & Innovation, *Digital Home Technologies for Aging in Place,* Intel Corp, *available at* http://www.intel.com/research/exploratory/digital_home.htm.

[160] *See* Molly Merrill, *New Website Sends Virtual House Calls Knocking*, July 8, 2008, Health IT News, *available at* http://www.healthcareitnews.com/story.cms?id=9539 (reporting on the launch of TalktoaDoc.Org, a new website that allows patients to interact with their doctors in real time via the Internet.).

[161] Microsoft, for example, has developed HealthVault, a web-based repository for personal health information that is accessible wherever a user is able to get online. For more information, *please see* http://www.healthvault.com/WhatIsHealthVault.htm.

[162] *See* Dave Mosher, *Robot Dials 9-1-1*, April 16, 2008, LIVE SCIENCE, *available at* http://www.livescience.com/technology/080416-robot-calls-help.html (describing a prototype robot – the uBOT 5 - that is capable of picking up small objects, detecting when someone has fallen, using a stethoscope, and dialing 9-1-1.).

[163] *See generally* Lawrence Lessig, The Future of Ideas (2001) for a brief overview of the development of the Internet.

[164] *See, e.g.*, Martin Wolf, Why Globalization Works, at p. 120 (2004).

[165] *See, e.g.,* Jeffrey A. Eisenach, *Broadband Policy: Does the U.S. Have it Right After All?* Progress on Point Release 15.14, Progress and Freedom Foundation (Sept. 2008), *available at* http://www.pff.org/issues-pubs/pops/2008/pop15.14USbroadbandpolicy.pdf (arguing that "the relatively deregulatory American approach to broadband policy has produced highly desirable results, including high levels of investment and innovation, nearly ubiquitous broadband availability, high and increasing levels of penetration, falling prices, and high levels of consumer satisfaction.").

[166] *See* Emily Shartin, *Designing Websites with Senior Citizens in Mind*, April 3, 2005, Boston Globe, *available at* http://www.boston.com/business/technology/articles/2005/04/03/designing_websites_with_senior_citizens_in_mind/.

[167] *See, e.g.,* Beth Noveck, *Wiki Government: How Open-Source Technology Can Make Government Decision-Making More Expert and More Democratic*, Democracy Journal (Dec. 2007), *available at* http://www.democracyjournal.org/article.php?ID=6570 (arguing that "Ordinary people, regardless of

institutional affiliation or professional status, possess information–serious, expert, fact-based, scientific information–to enhance decision-making, information not otherwise available to isolated bureaucrats" and that "[p]artly as a result of the simple tools now available for collaboration and partly as a result of a highly mobile labor market of "knowledge workers," people are ready and willing to share that information across geographic, disciplinary, and institutional boundaries.").

[168] One analysis found that a higher percentage of adults over age 65 voted in the 2000 presidential than all adults under 65. *See* Tucker Sutherland, *Senior Vote Growing Much Faster Than That of Younger Voters, Oct. 29, 2004,* SENIOR JOURNAL, *available at* http://seniorjournal.com/NEWS/Politics/2004/4-10-29SeniorVoteGrowth.htm. The Census Bureau reported that adults over 65 comprised cast nearly 20 percent of the votes in the 2004 presidential election and that 71 percent of registered senior voters actually voted. *See* Press Release, *Older Americans Month: May 2008*, U.S. Census Bureau, *available at* http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_editions/011603.html.

[169] For more information, *please see* www.benefitscheckup.org.

[170] For more information, *please see* https://a858-ihss.nyc.gov/ihss1/en_US/IHSS_languageSelectionPage.do.

[171] *See* Success Stories, "*Touch Tank" Puts Technology in the Hands of Seniors*, OATS, *available at* http://www.oatsny.org/touch_tank.htm.

[172] For more information, *please see* http://aging.senate.gov/.

[173] *See* http://www.apt.org/BB-changed-my-life/.

[174] Pew estimates that, as of May 2008, 43 percent of adults over the age of 65 remain offline. *Home Adoption 2008* at p. 13.

[175] *California Broadband Task Force Report* at p. 74-77.

[176] *See, e.g.*, Austan Goolsbee, *Subsidies, the Value of Broadband, and the Importance of Fixed Costs*, in BROADBAND: SHOULD WE REGULATE HIGH-SPEED INTERNET ACCESS? 278-294 (Crandall & Alleman, eds) (AEI- Brookings Joint Center for Regulatory Studies 2003).

[177] *See Number of Senior Citizens in Workforce Rapidly Climbing, Says New Report*, Feb. 15, 2008, SENIOR JOURNAL, *available at* http://seniorjournal.com/NEWS/Money/2008/8-02-15-NumberofSenCit.htm ("[In 2007], Kohl introduced two bills: the Older Worker Opportunity Act of 2007 (S.709) and the Health Care and Training for Older Workers Act (S.708), both of which would give older Americans the opportunity to work longer if they so choose and offer incentives to businesses for employing older workers.").

[178] This approach has been adopted in a number of states across the country. *See, e.g.*, Press Release, *New Commerce Program Encourages Broadband Availability,* Feb. 28, 2007, Wisconsin Dept. of Commerce, *available at* http://commerce.wi.gov/NEWS/releases/2007/034.html. It has also been endorsed by the National Telecommunications & Information Administration, which provides telecom advice to the President. *See* Report, *Networked Nation: Broadband in America*, at p. 3, National Telecommunications & Information Administration, U.S. Department of Commerce (Jan. 2008), *available at* http://www.ntia.doc.gov/reports/2008/NetworkedNationBroadbandinAmerica2007.pdf.

[179] Time Warner Cable is currently experimenting with this approach. *See, e.g., TWC Tees Up Metered Internet Trial,* June 3, 2008, LIGHTREADING, *available at* http://www.lightreading.com/document.asp?doc_id=155499&site=cdn.

[180] *See* Connected Nation, State Programs, http://www.connectednation.com/state_programs/.

[181] *See* Connected Nation, e-community Strategies, http://www.connectednation.com/state_programs/eCommunity_Strategies.php.

[182] *Connected Nation Report* at p. 4.

[183] *See* FCC, Wireline Competition Bureau, Industry Analysis and Technology Division, *Local Telephone Competition: Status as of June 30, 2007* (Jan. 2008).

[184] As of early December 2008, a large stimulus package was being negotiated for passage in early 2009. Preliminary discussions included the possibility of dedicating some of that funding for investment to increase access to broadband. *See, e.g.,* Corey Boles and Fawn Johnson, *Internet-Access Funds to be Included in U.S. Stimulus Plan*, Dec. 2, 2008, DOW JONES NEWSWIRE, *available at* http://telephonyonline.com/external.html?q=http://money.cnn.com/news/newsfeeds/articles/djf500/200812021616DOWJONESDJONLINE000620_FORTUNE5.htm.

[185] *See, e.g.,* Cecilia Kang, *New Coalition Drawing Up Nationwide Broadband Access Strategy*, Dec. 3, 2008, WASH. POST, *available at* http://www.washingtonpost.com/wp-dyn/content/article/2008/12/02/AR2008120203164_pf.html (noting that "representatives from technology and telecommunications companies, labor unions and public interest groups frequently at odds with one another agreed to provide the next president with a roadmap for how to accomplish those goals…That map could include tax breaks, low-interest loans, subsidies and public-private partnerships to encourage more investments in upgrading and building out high-speed networks.").

[186] *See* One Economy, Broadband/Hardware, http://www.one-economy.com/ourwork/broadband.

[187] *See* FTC, *Broadband Connectivity Competition Policy*, at p. 11, Staff Report (June 2007) *available at* http://www.ftc.gov/reports/broadband/v070000report.pdf.

[188] *Id*. at p. 157-159.